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FIELDIANA: BOTANY

A Continuation of the

BOTANICAL SERIES

of

FIELD MUSEUM OF NATURAL HISTORY

VOLUME 28
NUMBERS 1 AND 2

CHICAGO NATURAL HISTORY MUSEUM
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By Julian A. Steyermark and Collaborators.

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CONTRIBUTIONS TO
THE FLORA OF VENEZUELA

JULIAN A. STEYERMARK

AND COLLABORATORS

From Droseraceae through Umbelliferae

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BOTANICAL EXPLORATION IN VENEZUELA – II

DROSERACEAE

Drosera arenicola Steyermark, sp. nov.

Caulis brevissimus; foliis rosulatis confertis patentibus; stipulis 3 mm. longis; petiolis 7-8 mm. longis, 1 mm. latis; laminis linearispatulatis, 4 mm. longis, 1.5 mm. latis; pedunculo scapiformi 1, gracile, 8-15 mm. longo, glanduloso-pubescenti; inflorescentia ca. 4-flora; pedicellis 1.5-2 mm. longis glanduloso-pubescentibus; sepalis oblanceolato-oblongis, obtusiusculis, 4.2 mm. longis, 1.5 mm. latis, extus glanduloso-pilosis; petalis cuneato-spatulatis, apice rotundatis, 5 mm. longis, 2 mm. latis; stylis 3 ad partem medianam bipartitis; seminibus nigrescentibus elliptico-ovoideis reticulatis.

Type in herb. Chi. Nat. Hist. Mus., collected along recently hollowed-out spring branch on top of mesa by airport, vicinity of Santa Teresita de Kavanayén, state of Bolívar, alt. 1220 m., December 16-17, 1944, *Julian A. Steyermark 60920*, "leaves very red with elongated petiole but only slightly differentiated blade."

This species is distinguished by the elongated leaves with the lamina scarcely distinguishable from the petiole, by the several-flowered short scapes only 1-1.5 cm. long, and by the densely long pilose-glandular sepals. It is related to *D. cayennensis* Sagot in its densely pubescent peduncles and sepals, but differs from that species in the more numerously flowered peduncle and the narrower lamina of the leaves. In this new species the hairs on the sepals are long, pale, and have a tiny gland at the tip, whereas those of *D. montana* St. Hil., var. *Roraimae* (Klotzsch) Diels and var. *robusta* Diels are shorter, darker in color, and have a prominent gland at the tip.

Drosera sanariapoana Steyermark, sp. nov.

Caulis brevissimus; foliis rosulato-confertis patentibus; laminis rotundato-obovatis, ca. 3 mm. longis, 3 mm. latis; pedunculis scapiformibus compluribus (3) erectis filiformibus 3.5-7 cm. longis, 1-2-floris, parce glanduloso-pilosis, pilis sessilibus; sepalis linearioblongis, apice rotundatis, 4 mm. longis, 1.1 mm. latis, minute glandulari-pilosulis, glandulis sessilibus; petalis obovatis, apice rotundatis, 5 mm. longis, 3 mm. latis; antheris 1 mm. longis; filamentis 2 mm. longis, glabris; stylis 4, a basi bipartitis, integris, apice rhomboideo truncato paullo dilatatis; ovario 1.5 mm. longo glabro; seminibus nigris elliptico-ovoideis, reticulatis.

Type in herb. Chi. Nat. Hist. Mus., collected on wet savanna, vicinity of Sanariapo, near Río Sanariapo, tributary of Río Orinoco, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Julian A. Steyermark 58472*, "petals rose."

This species is related to *D. pusilla* H.B.K., *D. tenella* Willd., and *D. cayennensis*. It has 1-2-flowered peduncles, which are longer than in either *D. pusilla* or *D. tenella*, the sepals and peduncles are pilosulous, and the sepals are longer than in those two species. It differs from *D. cayennensis* furthermore in having less hairy and longer peduncles and sepals. From *D. communis* St. Hil. it may be distinguished by the fewer-flowered scapes and differently shaped seeds.

Drosera tenella Willd., var. **esmeraldae** Steyermark, var. nov.

A typo differt pedunculis 3-4-floris, 5-7 cm. longis, pedicellis 3 mm. longis, sepalis 2.5 mm. longis, 1 mm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected in wet places in savanna between Esmeralda Savana and southeastern base of Cerro Duida, Territorio Federal Amazonas, alt. 200 m., August 22, 1944, *Julian A. Steyermark 57850*, "corolla pale lilac."

From typical *D. tenella* this variety differs in the longer, usually 3-4-flowered scapes, longer pedicels, and longer sepals.

CRASSULACEAE

Echeveria bicolor (H.B.K.) E. Walther, var. **turumiquirensis** Steyermark, var. nov.

A typo differt pedunculis floriferis brevioribus, 3-5 cm. longis, 5-8-floris, inflorescentia 4-6 cm. longa, sepalis erectis adscendentibus vel adpressis, et petalis 12-14 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected in bluff crevices, north-facing slopes between La Trinidad and zone of cloud forest, Cerro Turumiquire, state of Sucre, alt. 1700-2000 m., May 5, 1945, *Julian A. Steyermark 62491*, "sepals erect, ascending to appressed, pale green; corolla deep red; leaves fleshy-coriaceous, pale green above, paler green below."

From typical *E. bicolor* (included in which species are *E. bracteolata* Link, Klotzsch, & Otto, and *E. venezuelensis* Rose) this differs in having shorter peduncles, a shorter, more crowded inflorescence with 5-8 instead of 12-20 flowers, and longer petals which average 12-14 mm. long instead of 8-10 mm. The petals are deep red in this new variety, whereas in the species they vary from vermilion-orange and vermilion-scarlet to salmon or salmon with yellowish tips.

BRUNELLIACEAE

Brunellia integrifolia Szyszyl., var. **ptariana** Steyermark, var. nov.

A typo differt foliis firmiter membranaceis vel subcoriaceis, calycis lobis tenuiter tomentosis, carpidiis 3.5-4 mm. longis, seminibus castaneo-brunneis lucentibus 2-2.5 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on steep forested slopes at base of first line of sandstone bluffs, on south-facing part, east of "Cave Rock", Ptari-tepuí, state of Bolívar, alt. 2130 m., November 4, 1944, *Julian A. Steyermark 59847*, "tree 60 feet tall; trunk pale gray with dull brown stripes similar to that of *Cedrela*, 1

foot in diameter; leaves firmly membranaceous, dark green above, silvery gray green below; rachis pale green."

Also collected on Mount Roraima, ascent of ledge along southwest-facing side, state of Bolívar, alt. 2100-2255 m., September 27, 1944, *Julian A. Steyermark 58721*, "shrub to small tree, 20-30 feet tall; leaves subcoriaceous, dark green above, silvery blue green below with raised buff-brown nerves and midrib; follicles small, pale green."

This variety differs from typical *B. integrifólia* of the Andes and Cordillera de la Costa in its larger fruits and seeds, the body of the follicle varying from 5.5-7 mm. long in the species, whereas in var. *ptariana* it varies from 3.5-4.5 mm. in length. In the species the seed is dark blackish-brown and 2.8-3 mm. long, while in var. *ptariana* it is chestnut-brown and shining, and 2-2.5 mm. long. Furthermore, in var. *ptariana* the calyx lobes are more finely tomentose, and the leaflets are firmly membranaceous to subcoriaceous, instead of subcoriaceous or coriaceous, as in typical *B. integrifolia*.

Besides the above newly described variety, two other species collected by the author are new to Venezuela. They are *B. elliptica* Cuatr. from the state of Táchira (rich moist woods at base of Páramo de Tamá, 4-10 kilometers above Betania, alt. 2500-2895 m., July 15, 1944, *Steyermark 57353*, "shrub 15-20 feet tall; leaves stiffly coriaceous-chartaceous, dark green above, gray or silvery green with brown nerves below"), and *B. tomentosa* H. & A. from the state of Mérida (dwarf cool forest between El Molino and ridge above San Isidro Alto, alt. 2430-2895 m., May 14, 1944, *Steyermark 56515*, "shrub or small tree, 20-25 feet tall; common; leaves chartaceous-subcoriaceous, deep green and rugose above, with sulcate nerves, buff gray below with raised and areolate nerves"). In their Catalogo de la Flora Venezolana, Pittier et al (p. 325) include *B. comocladifolia* Szyszyl., but *B. comocladifolia* was included only on the basis of "fide Engler." Study of Venezuelan material by the present author indicates that *B. comocladifolia*, a Colombian species with a 4-parted calyx, apparently does not occur in Venezuela.

The following key includes those species actually found to occur in Venezuela:

Leaves in whorls of 3's, simple ..... *B. tomentosa.*
Leaves opposite, pinnate
  Leaves glabrate below, glabrous above; rachis glabrous; follicles densely fine dark brown tomentulose, with longer hairs interspersed ..... *B. elliptica.*
  Leaves tomentulose (obscurely or densely below); rachis pubescent; follicles from finely gray-brown tomentulose and sparsely hispid to densely buff or deep brown and densely hispid
    Fruit small, 2.5-3 mm. long (body); seeds 1.5-2 mm. long; leaves with more or less prominent serratures directed forward and attenuate; calyx 4-5 parted
B. Funckiana.

Fruit larger, 3.5-7 mm. long (body); seeds 2-3 mm. long; leaves entire, subentire, or with crenate-dentate obtuse or rounded teeth; calyx 5-6-parted
Fruit body 5.5-7 mm. long; seeds 2.8-3 mm. long ..... *B. integrifolia.*
Fruit body 3.5-4.5 mm. long; seeds 2-2.5 mm. long ..... *B. integrifolia* var. *ptariana.*

CUNONIACEAE [16]

Weinmannia Balbisiana H.B.K., var. **ptariana** Cuatr., var. nov.

Folia quam typo paulo minora elliptica vel obovato-elliptica rigidora, breviter petiolata margine dentato-serrata anguste revoluta, 2.8-6.5 cm. longa, 17-37 mm. lata. Planta glaberrima, varietate *Moritzii* valde affinis.

Type in herb. Chi. Nat. Hist. Mus., collected along base of east-facing high sandstone bluffs, Ptari-tepuí, state of Bolívar, alt. 2400-2450 m., November 7, 1944, *Julian A. Steyermark 59939*, "small tree 25 feet tall; leaves chartaceous-firmly membranaceous, dark green and shining above, pale green below."

Also collected from same locality, *Steyermark 59935*, "sapling 3 feet tall; leaves firmly membranaceous, dark above, pale green below." This is a sterile juvenile form.

Weinmannia guyanensis Kl., var. **quinata** Cuatr., var. nov.

Folia quinque-foliolata vel ternata vel septenata. Internodia obovato-triangularia.

Type in herb. Chi. Nat. Hist. Mus., collected in valley between base of Cerro de Diablo (western extension of southern peak of Cerro Turumiquire) and Cerro de Neverí, along headwaters of Río de Amana, state of Sucre, alt. 2000 m., May 11, 1945, *Julian A. Steyermark 62754.*

This interesting plant differs from the type in having the leaves generally with 5 instead of 3 leaflets. Occasionally 3 or 7 leaflets occur. The typical specific form has in all specimens I have seen ternate leaves, and until now it was known only from Roraima.

Other material seen: fragment of type in F *(Schomburgk 661); Tate 387*, NY (Mt. Roraima); *A. S. Pinkus 289*, NY, US (Mt. Roraima).

Weinmannia pinnata L., var. **ptaritepuiana** Cuatr., var. nov.

Ramusculi terminali rufo-hirsuto-tomentosi. Folia 5-6 paribus foliolis, subcoriacea elliptica attenuata serrata; supra glabra nitida subtus nervo medio piloso. Rhachis pedicellique tomentuloso-hirti. Pedicelli 2-4 mm. longi. Bracteolae ovatae obtusae 2 mm. longae. Sepala glabra apice penicillato-ciliata. Ovarium sparse setiferum. Capsula parcissime puberula.

Type in herb. Chi. Nat. Hist. Mus., collected along base of south-facing high sandstone bluffs, Ptari-tepuí, state of Bolívar, alt. 2410

[16] By José Cuatrecasas

m., November 6, 1944, *Julian A. Steyermark 59900*, "small tree 25 feet tall; leaves subcoriaceous, dark green above, pale green below; young stems fulvous pubescent; bracts of rachis dull reddish-lavender; sepals pale green with fulvous pubescence; petals and filaments white."

This variety is distinguished from var. *caripensis* (H.B.K.) Cuatr. by the leaflets more elliptical, internodes of the upper branchlets and rachis of the inflorescence hirsute-tomentose, longer shaggy pedicels, larger bracteoles, and ovary with sparse hairiness.

Weinmannia roraimensis Cuatr., sp. nov.

Frutex vel arbor 3-5 m. alta. Rami cortice fusco plus minus verrucoso extremis tomentulosis. Folia opposita 4-6 cm. longa imparipinnata membranacea saepe 5-9-jugis. Petiolus 5-8 mm. longus tomentoso-hirtus, apicem versus gradatim alatus. Foliola anguste elliptico-oblonga basi attenuata apice obtusiuscula, 5-10 mm. longa 2-4 mm. lata margine tenuiter revoluta saepe utroque latere 2-3 dentibus obtusis, apicem versus gradatim minora terminalia quam adjacentia duplo vel sub duplo longiora; supra glabra nervo medio parce pilosulo excepto, infra nervo medio articulationibus plus minusve hirtis reliquo glabro. Internodia obovato-oblongo-alata. Stipulae 3 mm., orbiculares vel suborbiculares basi cordatae glabrae.

Pseudoracemi oppositi axillares vel subterminales 3-7 cm. longi. Axis sparse hirsutulus. Bracteolae ovales 1 mm. longae glabrae. Pedicelli tenues patentes hirti plus minusve 2 mm. longi. Sepala ovata rosea glabra apice breviter ciliata 1 mm. longa. Petala ovato-elliptica albo-rosea 1.5-2 mm. longa. Stamina glabra albescentia 2-3 mm. longa. Ovarium glabrum. Styli divaricati longi glabri (Fig. 43).

Type in herb. Chi. Nat. Hist. Mus., collected on ascent of ledge along southwest-facing side, from beginning of sandstone bluffs to summit, Mount Roraima, state of Bolívar, alt. 2255-2620 m., September 27, 1944, *Julian A. Steyermark 58766*, "shrub 10 feet tall; leaves firmly membranaceous, rich green above, pale green below; sepals pale green tinged pink; petals and filaments white; below waterfall spray among boulders or talus."

Additional specimen examined: Ptari-tepuí, along base of east-facing high sandstone bluffs, alt. 2410-2450 m., November 7, 1944, *Steyermark 59949*, "small tree 10-20 feet; leaves firmly membranaceous, deep green and shining above, silvery green below; calyx dull salmon; petals and filaments white; anthers pale yellow; has same type of ferruginous pubescence as *59900* and appears to be a dwarfed type derived from *59900;* commonly found on east side where water spray is constant."

Very closely related to *W. humilis* Engler, from which it may be distinguished by the narrower and more elongated leaflets, the terminal one much longer than the adjacent ones, the obtuse teeth of the leaflets, the racemiform inflorescence with longer pedicels, and the sepals glabrous except for a very few hairs at the apex. The plants

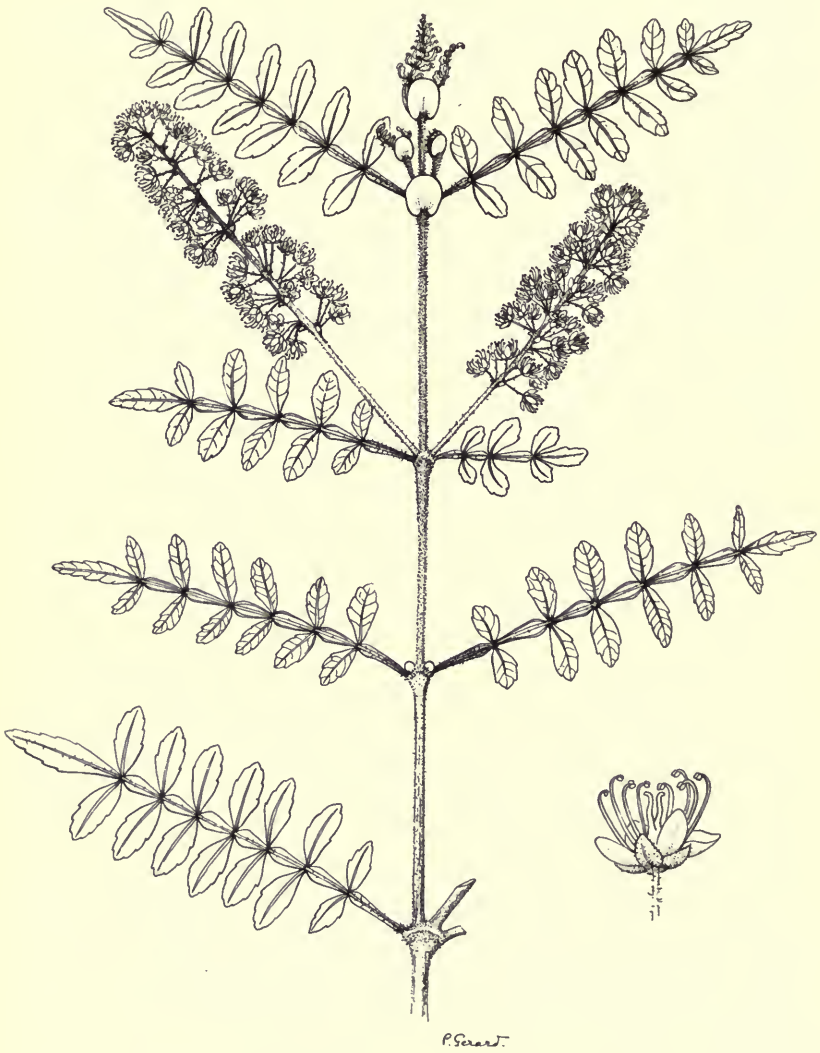

FIGURE 43
Weinmannia roraimensis Cuatrecasas
Spray (X 1), blossom (X 5).

recorded from Roraima as *W. glabra* L. f., var., by Oliver (Trans. Linn. Soc. **2**: 273), and by Brown (Id. id., **6**: 25), are surely to be referred to this species. I believe this species is sufficiently distinct from *W. pinnata*, which is moreover related to *W. humilis*, to justify specific segregation.

A plant collected by F. Cardona, also in Venezuela, "cumbre del Cerro Uaipán, 1940 m., Río Caroní, Guayana, November 26, 1946, *Felix Cardona 2073;* arbol 6 m. alto" (in US) is a slightly different form of *W. roraimensis*.

Weinmannia silvatica Engler, var. **Rollotii** (Killip) Cuatr., comb. nov.

W. Rollotii Killip, Journ. Wash. Acad. Sci. **16**: 568. 1926.

This species has its greatest development in Colombia, the type originating from the Popayan region *(Lehmann 8536)* where I also found the typical form. It is distributed from Ecuador to Venezuela, where it was first collected by Dr. Steyermark on the Venezuelan side of the Páramo de Tamá. The author has collected it on the Colombian side of the same páramo. In the West Cordillera of Colombia a variety with smaller and rotundate leaves and shorter inflorescences is to be found. The form from Cundinamarca has strong elevated nerves and is more hirtous than the type; it belongs to *W. Rollotii* which reaches Venezuela, and is here reduced to a variety of *W. silvatica*. My specimens from Sibundoy are intermediate forms.

TACHIRA: rich moist woods at base of Páramo de Tamá, 4-10 km. above Betania, alt. 2500-2895 m., July 15, 1944, *Steyermark 57352*, "shrub 8-10 feet tall; leaves chartaceous-subcoriaceous, deep green above, pale green below."

Weinmannia Steyermarkii Cuatr., sp. nov.

Arbuscula vel frutex 3-4 m. alta. Rami cortice fusco griseo nitido. Ramuli terminali dense hirsuto tomentosi rufescenti-ferruginosi.

Folia opposita imparipinnata 3-6 cm. longa, crasso-coriacea, brevissime petiolata precipue 5-6-jugis. Petiolus 2-4 mm. longus hirsuto-tomentosus. Foliola obovato-elliptica oblonga apice rotundata basi paulo attenuata margine remote serrata et valde revoluta, supra glabra nitentia atro-viridia subtus dense ferrugineo-tomentosa, nervo medio prominenti secundariis 4 utroque latere fere inconspicuis, 10-20 mm. longa, 6-8 mm. lata apicem et basim versus paulo gradatim minora terminalia quam lateralia aequantia vel longiora. Internodia subovato alata valde revoluta 3-4 mm. lata. Gemmae dense ferrugineo-tomentosae sericeae. Stipulae orbiculares usque ad 7 mm. latae, subcoriaceae supra glabrae nitidaeque subtus dense tomentosae.

Pseudoracemi oppositi in singulis paribus subterminalibus, 2-4 cm. longi. Axis dense hirtulo-tomentosus ochraceo-ferruginosus. Flores 3-5 in fasculis densis aggregati subsessiles brevissime pedicellatae (usque 1.5 mm.). Bracteolae ovato-lanceolatae hirsutae quam sepala aequilongae. Sepala ovata acuta 1.5 mm. longa hirto-tomentosa. Petala cochleata pallido-albida late elliptica 2 mm. longa glabra. Stamina 3.5 mm. longa. Ovarium glaberrimum. Discus hypogynus

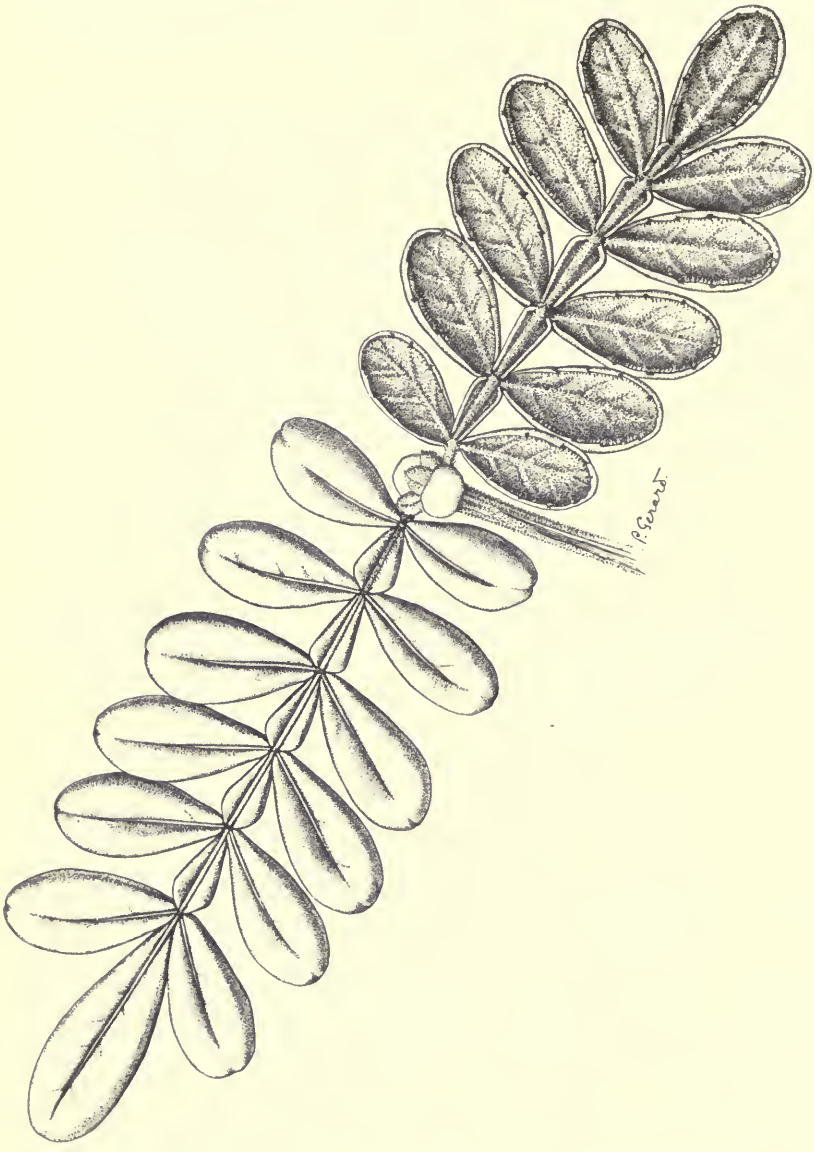

FIGURE 44
Weinmannia Steyermarkii
Enlarged (X 1½)

cupuliformibus pentagonalis partem mediam ovarium velans (Fig. 44).

Type in herb. Chi. Nat. Hist. Mus., collected on Ptari-tepuí, state of Bolívar, *Bonnetia roraimae* forest on southwest-facing shoulder, alt. 2000-2200 m., November 2, 1944, *Julian A. Steyermark 59759*, "shrub 10 feet tall; leaves subcoriaceous, subrevolute, dark green above, fulvous brown below; flowers fragrant, creamy white. Along ledges of boulder."

Additional specimen examined: summit of Carrao-tepuí, state of Bolívar, alt. 2470-2500 m., December 7, 1944, *Steyermark 60889*, "woods" (sterile specimen).

Weinmannia Steyermarkii is evidently nearest to *W. velutina* Schmidt, a species of Mount Roraima. From this species it differs in having a glabrous ovary. Other differences are in the thicker, more coriaceous, revolute leaves which are completely glabrous above. *Weinmannia velutina* has some pubescence on the leaves above, especially when they are young, has longer inflorescences, and much longer pedicels.

ROSACEAE[17]

Hesperomeles incerta (Pittier) Maguire, comb. nov.

Osteomeles incerta Pittier, Contr. U.S. Nat. Herb. 20: 107. 1918.

Collected in swampy woods between Paramito and Quebrada de Palmar, at base of Paramo de Tamá, 7 km. above Villapaez, state of Táchira, alt. 2500 m., July 14, 1944, *Julian A. Steyermark 57239*, "shrub 4-5 feet tall, leaves subcoriaceous, chartaceous, deep green and shining above, dull green below; petals white within, creamy without; calyx dull pale green."

Our plant is a good match for a type specimen of *O. incerta* at the New York Botanical Garden. Pittier in 1918 wrote of the need for general revision of the genus. That need is yet unsatisfied and even greater today.

Lachemilla aphanoides (Mutis) Rothm. var. **tripartida** (R. & P.) Maguire, comb. nov.

Alchimella tripartida R. & P. Fl. Peruv. 1: 68. 1798.

Alchimella aphanoides var. *tripartida* (R. & P.) Perry, Contr. Gray Herb. 84: 40. 1929

Collected in moist cloud forest, southwest-facing slopes at Los Aposentos, above Las Sabanetas, above Humocaro Bajo, state of Lara, alt. 2500-2530 m., February 3, 1944, *Julian A. Steyermark 55214*, "stems spreading."

Local name: "altamisa."

Venezuela, Colombia, Peru, Bolivia.

[17]By Bassett Maguire

Lachemilla lycopodioidea Maguire, sp. nov. Sect. *Aphanoides* (Perry) Rothmaler, Subsect. *Nivales* (Perry) Rothmaler.

Planta parva caespitosa; caulibus adscendentibus 2-4 cm. altis non-ramosis; foliis radicalibus ca. 10 mm. longis, vaginis ca. 5 mm. longis submembranaceis breviamplexicaulis sparse strigosis, stipulis linearis integris vel bifidis 4-5 mm. longis, petiolis 3-4 mm. longis, laminis tripartitis segmentis 3-4 mm. longis, 3-5 lobatis, lobis linearibus 2-3 mm. longis obtusis; foliis caulinibus apetiolatis; vaginis infundibuliformibus 3-4 mm. longis strigosis, 12-15 lobatis, lobis integris vel bifidis vel trifidis 3-5 mm. longis ca. 0.5 mm. latis linearibus obtusis sparse strigosis subcoriaceis marginibus aliquantum revolutis; floribus subsessilibus campanulatis dense adpressis sericeis 2.5-3.0 mm. longis, paucis in glomerulis terminalibus, hypanthio ca. 2 mm. longo intus glabro, bracteolis 4 lanceolatis, lobis hypanthii 4, longioribus bracteolis, oblongo-lanceolatis adscendentibus 2.0-2.25 mm. longis, aliquantum acutis; staminibus 2, filamento ca. 0.2-0.3 mm. longo; acheniis 5 stipitatis ca. 0.5 mm. longis obtusis; stylis 1.0-1.5 mm. longis, uncinatis subclavatis.

Type in herb. Chi. Nat. Hist. Mus., isotype in N.Y. Bot. Gard. herb., collected near upper limit of páramo around small lake, between Chachopo and Los Apartaderos near El Aguila, state of Merida, alt. 3930 m., April 15, 1944, *Julian A. Steyermark 55910.*

Lachemilla lycopodioidea would be bracted in Rothmaler's key to Colombian *Lachemilla*[18] with *L. imbricata, L. nivalis,* and *L. ramosissima.* It is most closely related to *L. nivalis,* from which it differs by its smaller habit, softer scantier pubescence, longer and much narrower often bi or trifid vaginal lobes, few flowers and ascending non-connivent sepal lobes.

Couepia steyermarkii Maguire, sp. nov.

Arbor mediocris; foliis ellipticis vel aliquantum ovatis vel obovatis coriaceis 4-6 cm. longis 3-4 cm. latis brevissimi-acuminatis, superne nitidis glabris valde depresso-venis, subtus tenuiter pallidis tomentulosis, costa 8-10 jugis lateralibus nervisque prominentibus, ad basim laminae patelliformi-biglandulosis; petiolo 7-10 mm. longo villoso dorse calculoso-glanduloso a pilis tecto; inflorescentiis axillaribus (evidenter) brevibus fulvo-hirsuti-villis; tubo calycis cylindrico ca. 1 cm. longo base gibbo, dense hirsuti-villo, intus glabro sed ad orificem dense relfexi-hirsuto, sepalis lanceolatis 4-5 mm. longis; stylo glabro sursum basim dense hirsuto, ovulo dense hirsuto.

Type in herb. Chi. Nat. Hist. Mus., isotype in N.Y. Bot. Gard. herb., collected in rich woods bordering the quebradas at base of southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 60025,* "tree 50-60 feet tall; leaves coriaceous, dark green above, gray-green below with reticulate veinwork; young stems dull brown-tomentose."

[18]Rothmaler, W. Alchemillae Columbianae, Trabaj. Mus. Cienc. Nat. Madrid, ser. Bot. **31**: 16. 1935.

It is with some hesitation that this description is offered since the type is inadequately provided with inflorescence and flowers. The inflorescences are apparently axillary and short, somewhat in the manner of *Couepia pauciflora*, with which it shares a similar pubescence. The leaves of the latter are lanceolate and of considerably thinner texture. Further, *C. steyermarkii* is suggestive of *C. canomensis* Benth., but this, an Amazonian species, has greatly larger (some 4x–5x) elliptic-lanceolate leaves and ample inflorescences.

Licania lasseri Maguire, sp. nov. Sect. *Hymenopus* Hook f.

Arbor parva vel frutex; ramulis teretibus 3-4 mm. crassis, dense rufo-fulvo-villosis; foliis 5-7 cm. longis 3.0-4.5 cm. latis ellipticoovatis vel elliptico-oblongis subcoriaceis, apice rotundata vel minute apiculata, base obtusa, superne glabris vel sparse puberulentibus, venis costaque prominulis pubescentibus exceptis, subtus fere brunneis pubescentibus, costa venisque lateralibus prominentibus 6-7 jugis; petiolo 2-3 mm. longo crasso dense villoso, basi patelliformi-biglanduloso; stipulis 3-4 mm. longis, triangulari-lanceolatis connatis; inflorescentiis paniculatis 10-12 cm. longis dense villosis, bracteis foliaribus biglandulosis, bracteolis 2-4 mm. longis lanceolatis; petalis et staminibus 5; fructibus immaturis obovoideis sulcatis in stipites incrassatas contractis, dense rufo-velutinis.

Type in N.Y. Bot. Gard. herb., collected at Kavanayén, Guayana venezolana, state of Bolívar, alt. 1300 m., May 27, 1946, *Tobias Lasser 1730*, "arbol pequeño de ramas tendidas."

Cotype in N.Y. Bot. Gard. herb. and herb. Chi. Nat. Hist. Mus., collected along streamlet, Gran Sabana between Mission of Santa Teresita de Kavanayén northwest to Río Karuai on large mesa, state of Bolívar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark 59360.*

By virtue of its 5 petals and 5 stamens, *Licania lasseri* is placed in the sect. *Hymenopus* Hook. f., and by its reddish-brown velvety pubescence and connate stipules is to be associated with *L. latifolia* Benth., *L. obovata* Benth., of the upper Rio Negro, and *L. krukovii* Standl., of the Río Jurua, Brazil.

In the first two the leaves are much larger, 10-20 cm. long, with 10-16 pairs of lateral veins and slender petioles 10-12 mm. long. The leaves of *L. krukovii* are lanceolate and exceed 15 cm. in length, 10-12 nerved, but have petioles 5 mm. or less long.

Licania parviflora Benth. var. **conduplicata** Maguire, var. nov.

Arbor parva; ramulis tenuibus, glabrescentibus, nigrescentibus, conspicue lenticellatis; foliis 2-4 cm. longis acuminatis subcoriaceis; basi conduplicata obtusa vel subcordata; floribus ca. 1.5 mm. longis, substipitatis; staminibus 4-5.

Type in N.Y. Bot. Gard. herb., isotype in herb. Chi. Nat. Hist. Mus., collected in vicinity "Misia Kathy Camp" on mesa between Ptari-tepuí and Sororopán-tepuí, state of Bolívar, alt. 1615 m., Nov. 15-17, 1944, *Julian A. Steyermark 60277*, "tree 25-30 feet tall; leaves drooping, subcoriaceous-chartaceous, deep green and shining above,

buff-silvery green below; corolla buff-brown; peduncle brownish."

Local name: "macarai-yek."

This small tree of the high sandstone mesas of the Guyana Highland may ultimately prove to be specifically distinct from the low rainforest variable tree of the upper Rio Negro and tributaries. Habitably it most resembles *Licania microphylla* Fanshawe & Maguire of British Guiana, which has plane basally biglandular leaves.

Licania parviflora Benth. var. **submembranacea** Maguire, var. nov.

Arbor mediocris; ramulis tenuibus conspicue lenticellatis; foliis 6-9 cm. longis, 2-4 (4.5) cm. latis submembranaceis lanceolatis vel ovato-lanceolatis, saepe falcatis acuminatis; floribus saepe conglomeratis; staminibus 4-6.

Type in N.Y. Bot. Gard. herb., isotype in herb. Chi. Nat. Hist. Mus., collected at Montaña de Aguacate, along Quebrada de Pajarral, tributary to Río Caripe, northeast of Alto de Aguacate, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 18, 1945, *Julian A. Steyermark 62173*, "tree 40 feet tall, wood very hard; leaves firmly membranaceous-chartaceous, deep rich green and shining above, silvery grey below; flowers dull green."

Co-type in N.Y. Bot. Gard. herb. and herb. Chi. Nat. Hist. Mus., collected on dryish forested slopes, Cerro La Danta, bordering tributary of Río León, northeast of Bergantín, state of Monagas, alt. 800-1100 m., February 22, 1945, *Julian A. Steyermark 61093*, "tree 50 feet tall, wood useful; leaves subchartaceous-membranaceous, dark green above, silvery gray below; flowers gray-green; fruit edible."

Local name: "carbonero."

The var. *submembranacea* is distinguished from the upper Rio Negro populations in its much thinner leaves and more densely floriferous conglomerate inflorescence.

Licania steyermarkii Maguire, sp. nov.

Arbor mediocris; ramulis teretibus lenticellatis; foliis late ovatis (4) 5-6 cm. longis 3.0-4.5 cm. latis coriaceis, apice brevissimo acuminato obtuso, basi late rotundata vel subcordata, superne glabris viridissimis nitidis, nervis obscuris impressis, subtus nervis costaque exceptis compactis tomentosis fulvis pallidis, nervis lateralibus 5-6 jugis prominentibus brunnescentibus, petiolo crasso 3-4 mm. longo glabrescenti eglanduloso rugoso transverse rimoso, stipulis lanceolato-subulatis rigidis persistentibus adnatis; paniculis axillaribus terminalibusque non-amplis 4-6 cm. longis fusco-villosis ramulis erectis vel recurvatis; floribus sessilibus ca. 2.0-2.5 mm. longis, intus villosis, lobis ca. 1 mm. longis, staminibus 3 (4), antheris ca. 0.5 mm. longis; ovario velutino; stylis brevibus pubescentibus; fructibus compresso-oblongis, 2.0-2.5 cm. longis, 10-14 mm. latis stipitatis glabris dense lenticellatis.

Type in N.Y. Bot. Gard. herb., isotype in herb. Chi. Nat. Hist. Mus., collected in woods bordering savanna, along Río Karuai, at the

base of Sororopán-tepuí, west of La Laja, state of Bolívar, alt. 1220 m., November 29, 1944, *Julian A. Steyermark 60768*, "rachis and buds yellowish-green; flowers creamy, fragrant."

Cotypes in N.Y. Bot. Gard. herb. and herb. Chi. Nat. Hist. Mus., collected on steep wooded slopes of Ptari-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Steyermark 60008*, "tree 50-60 feet tall;" along mesa escarpment between Santa Teresita de Kavanayén, state of Bolívar, alt. 1220 m., November 23, 1944, *Steyermark 60465*.

Licania subrotundata Maguire, sp. nov.

Arbor parva; ramulis teretibus glabris; foliis (4) 5-7 cm. longis (3) 3.5-5.5 (6.0) cm. latis coriaceis, superne glabris venis obscuris prominulis, subtus compactis pallidis fulvo-tomentosis, 5-6 jugis prominentibus brunneis nervis lateralibus costaque exceptis, late ovatis vel suborbiculatis, apice breve late acuminato vel rotundato, basi rotundata vel subcordata, petiolo crasso 4-6 mm. longo glabro sed lepidoto minute transverse rimoso eglanduloso, stipulis ca. 2.5 mm. longis lineari-subulatis, nodo adnatis caducis; inflorescentiis paniculatis fulvo-velutinis; floribus non visis; fructibus late compresso-orbicularibus ca. 3 cm. longis 1.5-2.0 cm. crassis compacte granulo-fulvo-tomentosis, stipibus 3-5 mm. longis; pedicello crasso 2-3 mm. longo.

Type in N.Y. Bot. Gard. herb., isotype in herb. Chi. Nat. Hist. Mus., collected between Picacho del Galipán and Boca del Tigre, Cordillera del Avila, Dist. Federal, alt. 1960-1980 m., June 11, 1944, *Julian A. Steyermark 56917*, "tree 25 feet tall; leaves stiff coriaceous, chartaceous, deep green and shining above, buff-silvery below, fruit brown."

Obviously related to *Licania micrantha*, *L. subrotundata* most resembles *L. ovalifolia* Kleinh.

Hirtella deflexa Maguire, sp. nov.

Arbor parva; ramulis patentibus fusco-hirsutis; foliis valde in planos duos deflexis; faciebus inferioribus adpressis, laminis ovatis (4) 5-8 cm. longis 2-4 (5) cm. latis ovatis valde cordatis basi rugosa, apice brevi-acuminato, papyraceis vel subcoriaceis, sparse hispido-strigosis venis supra impressis, subtus prominulis 7-8 jugis, petiolo valde recurvato 2-4 mm. longo valde hispido, stipulis lineari-subulatis ca. 4 mm. longis hispidis; paniculis axillaribus, in planum foliorum deflexis, 10-15 cm. longis valde patentibus vel aliquantum reflexis fulvo-hispidis, bracteis bracteolisque ovato-lanceolatis, maioribus 3-4 mm. longis, pectinate stipitato-glandulosis submembranaceis sparse hispidis; ramis 2-3-floribus; pedicellis 3-5 mm. longis, valde hispidis; floribus zygomorphis, hypantheis ca. 2 mm. longis, hispidis externe, glabris interne, sepalis ca. 3 mm. longis patentibus obovato-ovatis, extus hispidis, intus villosis; staminibus 6, filamentis secundis, ca. 10 mm. longis, antheris oblongis, ca. 0.5 mm. longis petalis oblongo-obovatis, ca. 4 mm. longis, 3 mm. latis, ungue brevissimo; ovario hispido; stylo dimidio inferiore hispido; fructu non viso.

Type in N.Y. Bot. Gard. herb., collected on riverbank, in Mt. Roraima District, vicinity Arabupu, state of Bolívar, alt. 4200 feet, *A. S. Pinkus 46*, "small tree 8 feet high; petals white, yellow at base; stamens crimson."

Cotype in N.Y. Bot. Gard. herb. and herb. Chi. Nat. Hist. Mus., collected in vicinity of "Misia Kathy Camp," on mesa between Ptaritepuí and Sororopán-tepuí, state of Bolívar, alt. 1615 m., November 15-17, 1944, *Julian A. Steyermark 60250*, "shrub 20 feet tall; leaves drooping in 2 planes, chartaceous, dark green above, dull green below; calyx wine purple on outside, dull lavender within; petals white, filaments rose-purple."

H. deflexa is closely related to and probably derived from *H. paniculata* Sw., differing most conspicuously in the axillary deflected raceme-like panicles rather than terminal panicles, and reflected-cordate leaves rather than non-cordate leaves.

LEGUMINOSAE[19]

Subfam. MIMOSOIDEAE

Calliandra trijugata Schery, sp. nov.

Frutex magnus ad 8 m. altus, ramulis teretibus suberosis pubescentibus, virgis lateralibus condensatissimus stipulis imbricatis et ad "virgis brevibus (short shoots)" similibus; foliis eglandularibus pinnis 3-jugatis foliolis ca. 15-jugatis, petiolis teretibus tomentosis ca. 1-1.5 cm. longis rhachidibus tomentosis 2-3 cm. longis ad apicem subtus conspicue apiculatis, pinnis 3-9 cm. longis apiculatis, foliolis oblique oblongis in amplitudine variabilibus 3-13 mm. longis 1-5 mm. latis basi inequilateraliter truncatis apici obtusis vel rotundatis supra et subtus pubescentibus costa subcentrale venis secondariis obscuris, stipulis ovato-lanceolatis ca. 4 mm. longis persistentibus subcucullatis extus pubescentibus; inflorescentiis capitulatis parvis, ex nodis defoliatis virgorum brevorum (short shoots), pedunculis 10-15 mm. longis pubescentibus bracteis capitularum squamiformibus; floribus paucis bisexualibus ? albis (staminibus supra purpureis exceptis), calycibus infundibuliformibus ca. 2 mm. longis subglabris angulatis breve dentatis, corollis infundibuliformibus ca. 6 mm. longis pubescentibus dentibus triangularibus ca. 2 mm. longis, staminibus paucis (ca. 10) 15-20 mm. longis tubo incluso, ovario subterete tomentoso; leguminibus sublinearibus ca. 12 cm. longis et 12 mm. latis, facie valvorum rufo-pubescente indentato transverse rugoso, marginibus elevatis subglabris crassis ca. 4 mm. latis longitudinaliter striatis, seminibus ca. 4-5.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. MBG, collected on rocky savana slopes between Ciudad Bolívar and Río Caroní, state of Bolívar, alt. 100 m., August 1, 1944, *Julian A. Steyermark 57592*.

Calliandra, natural and distinct as a genus, is notoriously difficult and inconstant in specific boundaries. Species have been regarded as generally quite localized. In that sense there need be little

[19]By Robert W. Schery

hesitation in describing *C. trijugata* as new, although it must be realized that extensive collections from tropical America will likely establish that many "species" are ecotypes or mere variants of entities represented by older names. I have been unable to examine specimens of a number of species reported from Venezuela, among them *C. panlosia* Johnston, *C. laxa* var. *parvifolium* Benth. and *C. Blakeana* Pittier, which to judge "ex char." are closely related to *C. trijugata*, and with which *C. trijugata* may well intergrade. *Calliandra trijugata* apparently differs from *C. panlosia* chiefly in the (constantly) 3 instead of 4 or 5 pairs of pinnae. Inflorescences of the type specimen have suffered insect attack, perhaps explaining why no complete gynaecium was found and why in some flowers this is apparently absent.

Inga bijuga Schery, sp. nov. (Sect. Diadema)

Arbor parva ca. 8 m. alta, ramulis ferrugineo-puberulis mox glabris dense bruneo-lenticellatis, foliis 2-jugatis, petiolis (ca. 15 mm. longis) et rhachibus (ca. 20 mm. longis) crassis subteretibus et exalatis puberulis glande urceolato inter insertionem jugi foliolarum inferiorum; foliolis ellipticis 7-16 cm. longis et 2.5-6.5 cm. latis apici acutis vel brevissime attenuatis basi acutis glabris coriaceis nitidulis, venis lateralibus ca. 11 paribus arcuatis prope marginem confluentibus, petiolulis 3-4 mm. longis puberulis; stipulis linearibus ca. 5 mm. longis; inflorescentiis axillaribus vel supra axillaris brevibus, pedunculis ca. 5-10 mm. longis puberulis, floribus albis brevepedicellatis (pedicellis ca. 1 mm. longis) brevissime-spicatis subumbellatisve ex receptaculo grosso, bracteis parvis ca. 1 mm. longis; calycibus tubulari-cupulatis ca. 2 mm. longis puberulis, dentibus 5 triangularibus 0.3-0.5 mm. longis; corollis tubulari-infundibuliformibus ca. 7 mm. longis glabris apici excepto puberulo, dentibus lanceolatis 1-2 mm. longis; staminibus multis ca. 1 cm. longis tubo incluso; ovariis oblongis glabris plano-quadrangularibus multiovulatis stipitatis; leguminibus ignotis.

Type in herb. Chi. Nat. Hist. Mus., collected on Sororopán-tepuí, state of Bolívar, alt. 2255 m., November 14, 1944, *Julian A. Steyermark 60103*.

Outstanding features of this new species are the bijugate, thick (coriaceous), glabrous leaflets and stout axes which give the plant a sort of "fleshy" appearance. The inflorescence is unusually short and condensed, born in (or above) the uppermost leaf axils.

In searching the scattered and perplexing literature concerning *Inga*, I have been unable to place the cited specimen to my satisfaction with any known species, although it bears great similarity to several. *Inga bijuga* seems to be close to the 6-foliolate *I. glomeriflora* Ducke, and, except for its much larger leaves, greatly resembles *I. pachyphylla* Harms to judge "ex char." It also resembles some of the once-pinnate *Pithecolobium* species, but has 2-ranked leaves characteristic of *Inga*. Its affinities are Amazonian.

Pithecolobium bijugatum Schery, sp. nov. (? Sect. Samanea, Ser. Subarticulatae)

Arbor parva 5-7 m. alta, ramulis puberulis mox glabris non lenticellatis teretibus; foliis bipinnatis pinnis 2-jugatis foliolis 3-5-jugatis, petiolis brevibus ca. 5 mm. longis grossis puberulis vel glabris nigrescentibus subteretibus, rhachidibus ca. 10-15 mm. longis puberulis supra sulcatis et submarginatis glandibus rotundatis vel subconicis inter insertiones pinnarum, pinnis 3-11 cm. longis rhachidibus internodialibus submarginatis glandibus concavis inter insertiones 2 parium superorum foliolarum, foliolis inequilateraliter obovatis 1-5 cm. longis et 0.5-3 cm. latis apici rotundatis vel subemarginatis basi inequilateraliter cuneatis vel late acutis glabris supra nitidis vel nitidissimis venis lateralibus multis prominentibus confluentibus et reticulatis; inflorescentiis axillaribus umbellatis, pedunculis ca. 3-4 cm. longis puberulis eglandularibus, bracteis lineari-spatulatis 3-4 mm. longis caducis ?, pedicellis tenuibus ca. 3 mm. longis nigrescentibus glabris; calycibus infundibuliformibus ca. 4 mm. longis (in alabastro) glabris apici pubescenti excepto, corollis glabris apici excepto, staminibus multis antheris eglandularibus. Floribus maturis et leguminibus ignotis.

Type in herb. Chi. Nat. Hist. Mus., collected at Sanariapo, Territorio Federal Amazonas, alt. 124 m., 1942, *Llewelyn Williams 15953*.

One is generally hesitant to regard as indubitably new a species of so large, complex, and incomprehensively studied a genus as is *Pithecolobium*. This is particularly true with *P. bijugatum*, the type lacking as it does fruit and mature flower. Yet I have been unable to match the Williams specimen satisfactorily with herbarium material at the Missouri Botanical Garden, or to locate it in any keys or in the scattered literature to *Pithecolobium*. Without fruit the species cannot be accurately assigned to a section of the genus, although certainly it falls either into Abaremotemo or Samanea. If the latter, its series well may be Subarticulatae. Superficially it greatly resembles the West Indian *P. obovale* (Abaremotemo), lacking however the large rachial glands and floral pubescence, and differing in leaflet texture. An unusual feature of *P. bijugatum* is the prominent anastomosing venation of the glossy upper leaflet surface, reminding one of *P. marginatum* and some species of *Dalbergia*.

Pithecolobium sabanensis Schery, sp. nov. (Sect. Samanea, Ser. Coriacea ?)

Frutex ca. 1 m. alta, ramulis cinereo-puberulis non lenticellatis teretibus; foliis bipinnatis pinnis 3-5-jugatis foliolis ca. 15-40-jugatis, petiolis ca. 1 cm. longis puberulis vel subglabris teretibus supra subsulcatis exceptis, rhachidibus ca. 2-5 cm. longis supra tomentellis cum glandibus urceolatis sessilibus inter insertiones pinnarum 5-10 cm. longis supra sulcatis et tomentellis cum glandibus parvis urceolatis inter insertiones 4-5 parium superorum foliolarum, foliolis linearibus ca. 14 mm. longis et 2.5 mm. latis apici obtusis vel rotundatis basi inequilateraliter rotundatis glabris coriaceis supra nitidis venis secondariis obscuris subtus venis subprominentibus

ad marginem confluentibus; inflorescentiis axillaribus umbellatis, pedunculis glabris ca. 3-4 cm. longis, pedicellis 3-4 mm. longis, bracteis parvis caducis; calycibus infundibuliformibus ca. 3 mm. longis glabris dentibus lanceolatis ca. 1 mm. longis, corollis infundibuliformibus ca. 7 mm. longis albis glabris dentibus ovato-lanceolatis ca. 3 mm. longis, staminibus 10 ca. 11 mm. longis glabris basi confluentibus in tubo ca. 4 mm. longo, antheris orbicularibus bilocularibus in juventute glandularibus, ovario oblongo ca. 1.5 mm. longo crasso apici subinflato et pubescente multiovulato, stylo glabro, stigmate capitato; leguminibus lineare-oblongis arcuatis ca. 3.5 cm. longis et 8 mm. latis planis coriaceis tarde-dehiscentibus glabris, valvis senibus nigrescentibus fibrosis et transverse fissis.

Type in herb. Chi. Nat. Hist. Mus., collected in Gran Sabana south of Mount Roraima, alt. 1065 m., October 2, 1944, *Julian A. Steyermark 59146.*

This shrubby species of the Gran Sabana (hence the specific name) appears similar to species such as *P. pedicellare* (DC.) Benth. (Sect. Samanea, Ser. Carnosae) and *P. corymbosum* (Rich.) Benth. (Sect. Samanea, Ser. Subarticulatae). Yet to judge from legume characters it apparently falls in a different series (Coriaceae) of the section Samanea where it is unique in its more delicate, pedicellate flowers. Its exact placement not obvious, it is not surprising that the specimen was received already labeled *Calliandra.* Indeed the inflorescence resembles *Calliandra,* but the arcuate legume not elastically dehiscent from above and the glandular leaf rachis preclude the species' placement there. The definite number of stamens (10) is unusual in the Ingeae (viz. *P. decandrum* Ducke), but the species seems to fit better the "catch-all" genus *Pithecolobium* than say *Piptadenia* (Piptadenieae) where the stamens and glandular anthers might indicate its falling in most keys to the subfamily.

Pithecolobium subaquaticum Schery, sp. nov. (Sect. Samanea, Ser Coriaceae)

Arbor gracilis vel frutex elatus, ramulis puberulis mox glabris lenticellatis teretibus, foliis magnis bipinnatis pinnis 1-2-jugatis foliolis multis (ca. 15-20-jugatis); petiolis brevibus ca. 15 mm. longis nigro-puberulis rhachidibus (si adsit) similibus glandibus scutelliformibus magnis subter insertiones pinnarum, pinnis ca. 12 cm. longis rhachidibus pubescentibus glandibus parvis subconicis subter insertiones plurorum parium (superorum) foliolarum, foliolis lineari-oblongis et subfalcatis ca. 2 cm. longis et 5 mm. latis apice obtusis vel late acutis basi inequilateralissime subtruncatis glabris coriaceis costis medianis venis secundariis subobscuris ad margines confluentibus; stipulis lanceolatis ca. 4 mm. longis; inflorescentiis axillaribus capitatis, axibus clavatis 2-3 cm. longis rufo-pubescentibus, bracteis triangularibus ca. 2-3 mm. longis; floribus subsessilibus; calycibus tubulari-infundibuliformibus magnis ca. 14 mm. longis rufo-tomentellis dentibus prominentibus lanceolatis ca. 4 mm. longis, corollis tubulari-infundibuliformibus 25-30 mm. longis rufo-tomentellis albis dentibus 5-6 mm. longis; staminibus multis (ca. 100 ?)

ca. 4 cm. longis albis tubo non exserto; leguminibus linearibus, ca. 15-20 cm. longis et 2 cm. latis, planis, coriaceis, aliquanto arcuatis, marginibus breve elevatis, reticulato-venosis, puberulis mox subglabris, breve stipitatis ex calycibus persistentibus, apici acuminatis.

Type in herb. Chi. Nat. Hist. Mus., collected at mouth of Sanariapo river, Territorio Federal Amazonas, alt. 124 m., 1942, *Llewelyn Williams 15946*. Evidently identical is *Ducke 653*, from the lower Río Negro near Manaos, Amazonas, Brazil, (det. by Ducke as *P. adiantifolium* Benth.).

This species is a member of the group centering about *P. discolor* (*P. adiantifolium*), in which group it is distinguished by the comparatively large flowers and few pinnae with many leaflets. The specific name is in reference to the species' habitat, described by Williams as aquatic, the trunk completely submerged in water (flood?); and by Ducke, as on banks periodically inundated.

Subfam. PAPILIONOIDEAE

Clitoria coriacea Schery, sp. nov. (Sect. Clitorianthes Bth.)

Arbusta volubula, ramulis plus minusve rigidis griseis puberulis vel appresso-pubescentibus mox glabrescentibus subangulatis nodosis ex cicatricibus folium; stipulis parvis lanceolatis ca. 5 mm. longis glabris griseis; foliis 3-foliolatis mediocribus, petiolis 3-4 cm. longis nigris puberulis supra planis, rhachidibus ca. 1.5 cm. longis petiolo similibus, stipellis parvis subulato-lanceolatis 1-3 mm. longis, petiolulis ca. 2 mm. longis nigris rugoso-callosis, laminis foliolarum ovatis vel ovato-lanceolatis ca. 6-9 cm. longis et 3-5 cm. latis basi breve cordatis vel subtruncatis apici obtuse acutis glabris coriaceis prominente reticulato-venosis nervis lateralibus ca. 5-6 paribus confluentibus 2-3 mm. ab marginibus supra nitidis; inflorescentiis brevibus axillaribus breve-racemosis pubescentibus, bracteis lanceolatis ca. 2-3 mm. longis, bracteolis (sub calyce) lanceolato-linearibus ad 6 mm. longis angustis acuminatis longitudinaliter striatis puberulis, pedicellis ca. 4 mm. longis; calycibus tubulare-campanulatis ca. 2.5 cm. longis (tubo ca. 1.5 cm. longo) puberulis et ventraliter cum pilis longis aureis, lobis lanceolato-acuminatis inferioribus exceptis linearibus et longioribus; petalis magnis purpureis, vexillo obovato ca. 55 mm. longo extus (ad medium) pubescente nervoso, alis et carina ca. 35 mm. longis glabris; staminibus 10, 9 in vagina longa unitis et 1 libero ad basin excepto, glabris ca. 4 cm. longis, antheris 10 oblongo-lanceolatis 2-3 mm. longis nigris ad margines brunneis exceptis; ovariis linearibus pilosis multiovulatis cum stylo ca. 45 mm. longis, stylo arcuato pubescente (supra ex ovaria ad stigmatem), stigmate capitato; leguminibus ignotis.

Type in herb. Chi. Nat. Hist. Mus., collected in open savana near San Antonio, Upper Orinoco, Territorio Federal Amazonas, alt. 130 m., April 27, 1942, *Llewelyn Williams 15047*, "arbusto trepador: las flores purpureas o de color de malva."

This species is close to *C. javitensis* Benth., from which it differs

primarily in the smaller, ovate-lanceolate, not acuminate, coriaceous leaflets. In fact, as far as I am aware, no other species of the genus has similar leaves. Other salient characteristics are the vegetative glabrescence, very short inflorescence, narrow subtending bractlets shorter than the calyx, large flowers, and long-acuminate calyx lobes.

Pterocarpus magnicarpa Schery sp. nov.

Arbor alta, ramulis brunneis rufo-puberulis mox glabris longitudinaliter valde albo-lenticellatissimis; foliis grandibus ca. 9-foliolatis, petiolis ca. 4 cm. longis teretibus rufo-puberulis, rhachidibus 12-15 cm. longis rufo-puberulis vel rufo-tomentulosis, foliolis alternatis oblongis vel ellipticis 11-20 cm. longis et 4-7 cm. latis apici attenuato-acuminatis basi cuneatis vel rotundatis supra glabris subtus minute rufo-puberulis cum nervis lateralibus conspicuis ca. 8 paribus inconspicue reticulatis; petiolulis ca. 4 mm. longis callosis; stipulis ovatis ca. 5 mm. longis? caducis; inflorescentiis racemosis ex axillibus superioribus (et mox defoliatis?) ad 15 cm. longis, pedicellis ca. 6 mm. longis (in fructu); floribus ignotis; leguminibus planis magnis arcuato-suborbicularibus ca. 11 cm. longis et 9 cm. latis basi rotundatis apici truncatis sessilibus reticulatis tomentulosis suberosis marginibus papyraceis; seminibus 1-3 ca. 2 cm. longis compressis verticalibus exocarpio rufo-brunneo.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. MBG., collected in woods along Río León by Quebrada Danta, tributary of Río Neverí, northeast of Bergantín, state of Anzoátegui, alt. 500 m., Feb. 20, 1945, *Julian A. Steyermark 61021*, "'sangre de drago.' Cortex of wood when cut has red color, the wood is poor, breaks easily; fruit eaten by animals; the bloody colored sap is used to treat inflamed tonsils or throat, put the sap in cold water and drink; tree 100 feet tall with buttresses; leaves firmly membranaceous, deep green above, dull gray green below."

The species is marked by the large, papyraceous, tomentulose legumes; and large, long-acuminate leaflets that show in the dry state little of the fine reticulation usually evident in the genus. The legume, although somewhat larger than in *P. Rohrii*, resembles that species, while the leaflets more resemble those of some specimens of *P. amazonum* (*P. Ulei*), *P. amazonicus* or unduly large *P. officinalis*. The name *P. rufescens* Bth. could apply to the Steyermark specimen, although Macbride describes the leaflet of *P. rufescens* as only "5 cm. long, 2 cm. wide or larger;". I have been unable to find any thorough description or illustration of *P. rufescens*, and no specimens are on deposit in the herbarium of the Mo. Bot. Garden.

Pterocarpus Rohrii Vahl var. **rubiginosus** Schery, var. nov.

Ab specie differt inflorescentiis elongatis ad 12 cm. calycibus rubiginoso-tomentosis ca. 9 mm. longis pedicellis ca. 5 mm. longis floribus magnis ca. 15 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. MBG., collected in level rainforest with Roystonea oleracea, Sabal mauritiaeformis, Scheelea, and Bactris, near Taria, state of Yaracuy, alt. 75 m., May

29, 1944, *Julian A. Steyermark 56861*, "tree 35 feet; corolla orange; calyx brownish green; leaves subcoriaceous, deep green above, dull green below."

There has been some confusion regarding *P. Rohrii* in the past, most specimens so determined actually being *P. amazonicus* accordint to Ducke. I have accepted Ducke's interpretation in considering the generally smaller-flowered, short-pedicellate, long-bracteolate collections as *P. amazonicus*, and the generally larger-flowered, longer-pedicellate, short-bracteolate specimens as *P. Rohrii*. The Steyermark collection appears to be a variant of the latter, unique in the rather rubigenous tomentum of the inflorescence, and at or near the upper extreme in flower size, pedicel length, and inflorescence length. The obcordate standard is about 15 mm. wide and long, glabrous, yellow-orange and without a basal purple spot characteristic of many species. Inflorescences are axillary from both foliate and defoliate nodes (the latter condensed on short, new, lateral twigs), with caducous bracts and bractlets. The leaves are mostly 5-7-foliolate; the leaflets alternate, oblong or elliptic, 6-15 cm. long and 3-7 cm. wide, glabrous, markedly reticulate. Affinities of the variety are with Andean (Colombian) collections, rather than Amazonian or Guianian.

Swartzia angustifoliola Schery, sp. nov. (Ser Tounateae?)

Arbor 10 m., ramulis juventate rufo-velutinis mox glabris; foliis decussatis pinnatis cum foliolis multis (ca. 17: i.e. 8-jugatis), petiolo rufo-velutino 15-20 mm. longo supra plano, apici marginato, rhachide 10-15 cm. longo rufo-velutino ad insertionem foliolorum dilatato et conspicue biapiculato (appendicibus subulatis ca. 2 mm. longis), foliolis anguste oblongis 5-8 cm. longis et 1.5-2 cm. latis basi rotundatis apici attenuatissime supra glabris et nitidis subtus rufo-puberulis venis costa excepto inconspicuis reticulatis; petiolulis brevibus ca. 1 mm. longis; stipulis parvis lanceolato-subulatis ca. 1 mm. longis; inflorescentiis lateralibus ex ramis vetulis solitariis racemosis ca. 8 cm. longis rufo-tomentulosis, bracteis parvis lanceolatis ca. 1 mm. longis, pedicellis rufo-tomentulosis ca. 5 mm. longis; floribus multis, ignotis, calycibus vetustioribus 4-5-segmentatis ca. 6 mm. longis intus glabris extus rufo-tomentulosis; leguminibus oblongo-reniformibus 2-2.5 cm. longis et 10-12 mm. latis rubris appresso-pubescentibus subteretibus basi stipe ca. 5 mm. longo apici recurvo-subuncinatis (stylo breve uncinato?) monoseminatis; seminibus oblongis ca. 20 mm. longis et 8-9 mm. latis glabris nigris nitidis apici cum arillo albo conspicuo ca. 1 cm. longo et funiculo tenue ca. 8 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected on solid ground near Capihuara, on the upper Casiquiare, Territorio Federal Amazonas, alt. 118 m., May 26, 1942, *Llewelyn Williams 15560*, "N.V. Chavanare de tierra firme. Arbol delgado de 10 m. con corona paqueña, algo abierta; el fruto es una legumbre de color rosado a castano claro, dehiscente, como de 30 cm. de largo, monospermo, las semillas negras lustrosas, envueltas en un aril blanco; el tronco derecho, 8

cm. de diametro, redondo, sin ramas por las 3/4 partes de la altura; entre vegetacion baja en sitios medio abiertos de tierra firme; la corteza delgada, lisa, grisacea y la madera de color claro;".

Although the type specimen is not in flower and is thus difficult to trace through the keys, I am convinced from perusal of the literature that it is unlike other species in its area. I can suggest no very closely allied species, although *S. angustifoliola* does resemble several species of eastern and southern Brazil, such as *S. apetala* Raddi and *S. acutifolia* Vog. It is marked by the many, narrow, long-acuminate leaflets; lateral inflorescences; and short, "stub-nosed" reddish legume bearing a single conspicuously arillate and funiculate seed.

Swartzia parvifolia Schery, sp. nov.

Arbor ca. 15 m. alta, ramulis juventates puberulis mox glabris nigrescentibus; foliis parvis 6-10 cm. longis 5-7-foliolatis, petiolo 6-10 mm. longo puberulo vel glabro terete nigro, rhachide 20-40 mm. longo puberulo vel glabro exalato nigro; foliolis oppositis vel subopositis ovato-lanceolatis 3-6.5 cm. longis et ca. 2 cm. latis basi rotundatis apici caudato-acuminatis glabris (puberulis subtus ad costam exceptis) supra nitidis et nigrescentibus (in sicco) venis lateralibus inconspicuis ascendentibus confluentibus ad marginem non crebris; petiolulis 2-3 mm. longis; stipulis minutis lanceolatis caducis; inflorescentiis axillaribus ca. 5 cm. longis aureo-appressotomentulosis cum floribus paucis (ca. 5?), pedicellis ca. 15 mm. longis tomentulosis; floribus non visis; calycibus vetustioribus ca. 5-laciniatis, segmentis 8-9 mm. longis extus aureo-tomentulosis intus glabris; leguminibus immaturis? cum stipe ca. 6 cm. longis (stipe ca. 13 mm. longo) et 15 mm. latis oblongis basi cuneatis apici inequilateraliter obtusis vel acutis glabris, rugoso-verrucosis ligneo-coriaceis stylo vetere recto breve (ca. 3 mm. longo?) (Fig. 45).

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. MBG., collected in wooded ravine below edge of mesa, mesa escarpment between Santa Teresita de Kavanayén and wooded quebrada about 8 km. northwest of Kavanayén, state of Bolívar, alt. 1220 m., Nov. 23, 1944, *Julian A. Steyermark 60459*, " 'aru-cayu-yek' Tree–; leaves coriaceous, dark green above, dull green below."

This species seems to be a high elevation variant of the Amazonian *S. laevicarpa* Amsh., from which it can be distinguished by the smaller, narrower, caudate-acuminate leaflets and smaller legume. Also somewhat similar in the herbarium to *S. parvifolia*, but having broader, differently veined leaflets and smaller legume, is *S. dipetala* Willd. ex Vog. Were it not that a large number of new entities have resulted from Steyermark's collections from the cited locality I would be more hesitant in describing as new a *Swartzia* known only in fruit and impossible to trace through the keys. The type specimen was received tentatively determined as *Machaerium* by Pittier.

Swartzia Pittieri Schery, sp. nov. (Ser. Orthostyleae)

Arbor ramulis subangulatis leviter pubescentibus mox glabris;

FIGURE 45
Swartzia parvifolia
Habit of fruiting branch (X 2/3)

foliis pinnatis 7-foliolatis, petiolo breve 5-8 mm. longo aureo-tomentoso subterete exalato; rhachide petiolo simile ad insertionem foliolorum biapiculato cum appendicibus subulatis 1-2 mm. longis; foliolis ovato-oblongis vel obovato-oblongis 3-8 cm. longis et 2-3.5 cm. latis basi rotundatis apici obtusis glabris concoloribus venis lateralibus ca. 8-jugatis moderatim conspicuis; petiolulis callosis pubescentibus 1-2 mm. longis; stipulis ovatis ca. 3 mm. longis caducis; inflorescentiis racemosis solitariis vel pauci-fasciculatis ex axillis (defoliatis?) superioribus 5-15 cm. longis puberulis, bracteis minutis lanceolatis ca. 1 mm. longis, pedicellis subglabris ca. 13 mm. longis; floribus multis, alabastro rotundato ca. 5 mm. alto, calyce vetustiore 2-partito glabro, petalo 1 suborbiculare ca. 1 cm. longo flavo; staminibus brevioribus multis ca. 7 mm. longis, staminibus longioribus 4 ca. 12 mm. longis; ovario fusiformi ca. 5 mm. longo glabro compresso ca. 12-ovulato, stipe 4-5 mm. longo; stylo breve ca. 2 mm. longo glabro arcuato sed subrecto et non uncinato, stigmate cinereo-puberulente; legumine ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected among granite boulders at foot of El Perico, Puerto Ayacucho, Territorio Federal Amazonas, alt. 124 m., January 13, 1942, *Llewelyn Williams 13820*, "tree 25 to 30 feet tall; crown irregular, branches twisted; flowers yellow, in terminal panicles; trunk round, moderately straight, 10 inches diam., unbranched for half the height; bark gray, scaly and fairly rough; wood hard, light colored, heart purplish brown, thin;".

This species is named in honor and memory of Henri Pittier, who cited the Williams collection as *Swartzia sp.* in the Catalogo de la Flora Venezolana, Caracas, 1945. It is obviously closely allied to *S. Trianae* Benth., which has, however, 5 instead of 7 leaflets and shows other minor differences. Also related is *S. Jorori* Harms of Bolivian Amazonia, which, however, has smaller, more slender inflorescences; apiculate buds; and typically fewer leaflets on more elongate petiole and rachis. Both *S. Pittieri* and *S. Trianae* are marked by the bipartite calyx.

Swartzia tepuiensis Schery, sp. nov. (Ser. Orthostyleae)

Arbor 10 m., ramulis crassis, angulatis, nigro-tomentosis; foliis grandibus pinnatis foliolis 7 (3-jugatis), petiolo nigro-velutino 3-5 cm. longo supra plano bisulcatoque apici marginato eglandulare; rhachide ca. 8 cm. longo petiolo similo inter insertiones foliolorum appendiculato cum callo plano apici rotundato vel emarginato; foliolis oblongis 8-18 cm. longis et 4-7.5 cm. latis basi obtusis apici obtuse et breve acuminatis, coriaceis, supra glabris nervis lateralibus ca. 16 paribus subparallelibus subindentatis non conspicue reticulatis ad marginem confluentibus subtus rufo-tomentosis vel hirsutis nervis lateralibus elevatissimis, petiolulis grossis ca. 6 mm. longis nigro-velutinis; stipulis magnis suborbicularibus ca. 15 mm. longer et 20 mm. latis caducis; inflorescentiis racemosis 5-15 cm. longis 3-4-fasciculatis ex axillis superioribus brunneo-velutinis, bracteis ovatis vel oblongis 7-8 mm. longis concavis intus glabris (extus brunneo-velutinis inflorescentiis similibus) persistentibus, pedicellis ca. 1 cm. longis ebracteolatis; floribus multis, alabastro rotundato, calyci-

bus in anthese 3-6-segmentatis intus glabris extus brunneo-hirsutissimis, petalo 1 aureo magno ovato-orbiculare ca. 25 mm. longo intus glabro extus ad nervis conspicue brunneo-pubescentis, staminibus brevioribus multis ca. 1 cm. longis antheris bilocularibus cum connectivo grosso ca. 1 mm. longis et latis, staminibus longioribus 5 ca. 16 mm. longis antheris ca. 2 mm. longis; ovario fusiforme ca. 7 mm. longo rufo- vel cinereo-tomentoso, stipe aequilongo; stylo recto ca. 7 mm. longo nigro glabris (basi excepto), stigmate parvo cinereo-puberulente; legumine ignoto.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. MBG., collected in upper woods at southeastern base of Carrao-tepuí, state of Bolívar, alt. 1460-1615 m., Dec. 4-5, 1944, *Julian A. Steyermark 60840*, "tree 30 ft., single petal and anthers golden-orange; outside of sepals, pedicels and rachis rich deep brown; inside of sepals pale green; leaves subcoriaceous, dark green above, buff-brown below."

The species is named for the highland "tepui" country to which it and its near relatives are indigenous. The specimen cited was received determined by Pittier as *S. pachyphylla* Harms, a species which it resembles as it does also the very similar *S. grandifolia* Bong. and *S. xanthopetala* Sandw. *S. tepuiensis* differs from these, however, in lacking bractlets beneath the calyx, in the blunt appendage between insertion of the petiolules, in the generally less alate leaf rachis, and in the more abundant secondary venation than *S. grandifolia* and *S. xanthopetala*, and less coarse venation than *S. pachyphylla*. To judge "ex. char." the species would be close to *S. tomentosa* var. *alstoni* Sandw. of British Guiana, which, however, is reported to have inflorescences arising from old branches, the clearly not the case in *S. tepuiensis*.

Taralea rigida Schery, sp. nov.

Frutex subdecumbens ca. 1 m., ramis elongatis teretibus glabris nigrescentibus non lenticellatis; foliis (in typo) oppositis, subopposite et alternatis, foliolis oppositis paripinnatis 1-2-jugatis; petiolis 3-4-cm. longis glabris eglandularibus subteretibus supra planis exceptis, rhachidibus (si adsit) ca. 2 cm. longis glabris apici cum apiculo subulato prominente 3-8 mm. longo; foliolis 2 vel 4 ovato-lanceolatis ca. 7 cm. longis et 2 cm. latis basi rotundatis apici acutis et breve-attenuatis glabris rigidi-coriaceis supra nitidis subavenosis subtus minute reticulatis cum venulis elevatis; petiolulis calloso-rugosis ca. 2 mm. longis; stipulis non visis; inflorescentiis terminalibus et ex axillis superioribus paniculatis ad 15 cm. longis pauci- et breve-ramosis, bracteis subulatis ca. 1 mm. longis caducis, pedicellis 4-5 mm. longis supra articulatis cum stipe calycis; 2 lobis superioribus calycis oblongis ca. 12 mm. longis et 5 mm. latis rubris membranaceis glabris, 3 lobis inferioribus minutis; petalis 5 subviolaceis libris oblongis (vexillo obcordatis) subaequalibus 8-11 mm. longis glabris; staminibus 10 unitis (monadelphis) ca. 8 mm. longis glabris antheribus ovalibus ca. 1 mm. longis; ovariis ovatis ca. 2 mm. longis uniovulatis compressis sed ad ovulam turgidis breve-stipitatis lateraliter glabris ab margine superiore pilosis, stylis

elongatis ca. 5 mm. longis glabris, stigmatibus capitatis; leguminibus ignotis (Fig. 46).

FIGURE 46

Taralea rigida

A, Habit of flowering branch (X 2/3); B, Flower (X 1); C, Calyx (X 1)

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. MBG., collected on rocky edge of mesa, along mesa escarpment between Santa Teresita de Kavanayén and wooded quebrada about 8 km. northwest of Kavanayén, state of Bolívar, alt. 1220 m., Nov. 23, 1944, *Julian A. Steyermark 60450*, "sprawling shrub 2-3 ft. with spreading elongated branches; leaves coriaceous, bronze dull green above, dull olive green below; rachis blackish; calyx orchid-lavender; standard rose-orchid; wings lavender; keel pink-rose."

This species seems to be quite unlike others in the genus, and I can suggest none as closely related. It is marked by the rigidly coriaceous leaflets in 1 or (less often) 2 pairs, the prominent mucron that terminates the petiole (or rachis), and in being a sprawling shrub rather than a tree. The specific name is in allusion to the stiff aspect of the leaves. Although the genus (as segregated from *Dipteryx* (*Coumarouna*)) centers in the Guiana uplands, *T. rigida* comes from a higher more severe habitat than usual.

Taralea Steyermarkii Schery, sp. nov.

Arbor ad 10 m. alta, ramulis glabris non lenticellatis; foliis alternatis vel suboppositis, foliolis 3-jugatis oppositis vel suboppositis; petiolis 2-4 cm. longis glabris vel subglabris teretibus supra planis exceptis, rhachidibus 5-9 cm. longis glabris eglandularibus lateraliter marginatis; foliolis ellipticis 4-8 cm. longis 2.5-4 cm. latis apici obtusis et breve retuso-acuminatis basi obtusis glabris minute reticulato-nervosis nervulis elevatis supra nitidis et nigrescentibus; petiolulis calloso-rugosis ca. 3 mm. longis; stipulis non visis; inflorescentiis magnis ad 25 cm. paniculatis solitariis vel paucifasciculatis ex axillis superioribus, bracteis lanceolatis ad 3 mm. longis caducissimis, pedicellis ca. 5 mm. longis apici articulatis cum stipe breve calycis; tubo calycis breve 2 lobis superioribus orbiculari-obovatis ca. 11 mm. longis et 8 mm. latis glabris (marginibus tomentulosis exceptis) membranaceis 3 lobis inferioribus minutis; petalis 5 libris aequilongis, vexillo ovato-orbiculare ca. 11 mm. longo et 9 mm. lato reflexo glabro breve stipitato subconduplicativo, alis apici latioribus et profunde bilobatis, carinis inaequilateraliter oblongis ad marginem inferiorem adhaerentis; staminibus 10 ca. 8 mm. longis unitis (monodelphis) glabris antheris ca. 0.5 mm. longis versatilibus; ovariis ovato-oblongis ca. 3 mm. longis compressis glabris margine superiore excepto piloso 1-ovulatis, stylis ca. 5 mm. longis glabris, stigmatibus capitatis; leguminibus ca. 2 cm. latis dehiscentibus (Fig. 47).

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. MBG, collected along Río Karuai, northwest of Santa Teresita de Kavanayén, state of Bolívar, alt. 1220 m., November 30, 1944, *Julian A. Steyermark 60822*, "tree 20-30 feet——, rachis and pedicels dull purple; keel and standard purple; wings lavender lilac; calyx dull purple."

The type collection of this species was received tentatively determined by Pittier as *Taralea oppositifolia* var. ?, and indeed it

FIGURE 47

Taralea Steyermarkii

A, Habit of flowering branch (X 2/3); B, Single flower (X 2).

greatly resembles that species. The large broad calyx lobes; an ovary that is glabrous except where pilose on the upper margin (as in *T. rigida* rather than *T. oppositifolia* with a pubescent ovary); and the short, broad, more delicately veined leaflets serve to distinguish *T. Steyermarkii* from *T. oppositifolia.* Included with the Chicago specimen are some legume fragments, presumably from the same plant. These indicate marked, elastic dehiscence and coiling of the thickish valves, but are too fragmentary and weathered to indicate full size and shape of the legume.

Zollernia grandifolia Schery sp. nov.

Arbor 18 m. ramulis teretibus glabris; foliis simplicibus ellipticis ca. 15-22 cm. longis et 6-10 cm. latis basi late acutis apici acutis breve acuminatisque glabris pauci (ca. 20-30 dentibus per folium) et inconspicue serratis venis prominulis reticulatis confluentibus, marginibus anguste callosis; petiolis brevibus ca. 5 mm. longis callosorugosis supra sulcatis; stipulis lineari-subulatis ca. 3-4 mm. longis caducis; inflorescentiis pauci-fasciculatis ex axillis superioribus, paniculatis diffusis 10-15 cm. longis, rufo-tomentulosis, bracteis brevibus lanceolatis ca. 1 mm. longis tomentosis persistentibus, pedicellis ca. 6 mm. longis rufo-tomentulosis prope medium bibracteolatis; floribus numerosis, flavis, in alabastro inaequilateraliter ovoideo-conicis et breve acuminatis; calyce tomentuloso ca. 7 mm. longo, limbo caduco ca. 6 mm. longo; petalis 5 oblongis vel suborbicularibus 5-6 mm. longis glabris; staminibus 10 libris, filamentis brevibus 1-2 mm. longis glabris, antheris linearibus 4-5 mm. longis apici attenuatis levissime pilosis; ovario oblongo ca. 4 mm. longo juventate cinereo breve stipitato ca. 5-ovulato compresso terete, stylo ca. 3 mm. longo arcuato glabro, stigmate parvo; legumine ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected in upland forest, Salto de Para, Medio Caura, state of Bolívar, alt. 200-250 m., 4-3-1939, *Llewelyn Williams 11370,* "arbol sylvestre; copa tendida; tronco redondo, 50 cm. diam., sin ramas por 9 m.; corteza separada in escamas gruesas; corazon marron oscuro y albura blancuzca; madera dura;".

Zollernia grandifolia is similar to *Z. paraensis* Hub., the only other Amazonian species, but differs from the latter in the more diffuse, profusely branched, rufous inflorescence and the larger, shallowly toothed leaves. The collection constitutes a new record for the genus in Venezuela, although recently *Z. paraensis* has been collected in British Guiana. Certain British Guiana specimens determined by Sandwith as "near *Z. paraensis*" may be *Z. grandifolia.* The type collection of *Z. grandifolia* has been misdetermined as *Swartzia macrophylla* and was found so located in the Chicago collections.

HUMIRIACEAE

Humiria pilosa Steyermark, sp. nov.

Arbor 12-13 m. alta; ramulis junioribus pubescentibus; foliis elliptico-oblongis coriaceis, 3-5.2 cm. longis, 1.5-2.5 cm. latis, in

petiolum pubescentem 1-2 mm. longum contractis, apice obtusis emarginatis, basi cuneatis, supra eglandulosis, subtus juxta marginem ipsum obsolete crenulatis inter crenas dense impresse glandulosis, facie superiore glabra, facie inferiore vel plerumque costa media pilosa; inflorescentia folio multo breviori, dense cymoso-corymbosa, dense pubescenti, pedunculo (immaturo) 2 cm. longo; calyce utrinque pilis brevibus simplicibus instructis, lobis suborbicularibus; petalis lanceolato-oblongis obtusis extrinsecus hirtellis, intus glabris; staminibus liberis, ca. 20, filamentis liberis, antheris basi breviter barbatis; ovario glabro.

Type in herb. Chi. Nat. Hist. Mus., collected in rich woods, vicinity of "Misia Kathy Camp", on mesa between Ptari-tepuí and Sororopántepuí, state of Bolívar, alt. 1615 m., November 15-17, 1944, *Julian A. Steyermark 60289*, "tree 40 feet tall; leaves coriaceous, deep green above, paler green below."

This species differs from *H. savannarum* Gleason of the base of Duida in having free filaments throughout, sepals pubescent both without and within, petals pubescent dorsally from base to apex and not only in distal half, anthers shortly barbate at the base, stems pubescent throughout at maturity, and lower leaf surface as well as lower midrib pubescent.

ERYTHROXYLACEAE

Erythroxylon venezuelense Steyermark, sp. nov.

Frutex vel arbor, 6-10-metralis; foliis petiolatis, petiolis 2-3 mm. longis, late ellipticis, basi acutis, apice obtusis vel acutis brevissime mucronulatis, 4-10 cm. longis, in medio vel supra medium 1.5-4.5 cm. latis, supra nitidis, subtus pallidioribus, nervo medio subtus valde prominente, subcoriaceis; stipulis persistentibus, 1-1.5 cm. longis, lanceolatis, dorso carinatis, apice manifeste fimbriatis vel 3-setulosis, manifeste longitudinaliter striatis; floribus in axillis foliorum 3-6 congestis, pedicellatis, pedicellis 3-4 mm. longis, 5-angularibus; calyce 2.8 mm. longo, lobis ovato-triangularibus, 1.5 mm. longis, 1.2 mm. latis; petalis oblongis, apice rotundatis, 4 mm. longis, 2 mm. latis; urceolo stamineo calyce paulo longiori, 2 mm. alto; stylis 3 discretis.

Type in herb. Chi. Nat. Hist. Mus., collected on wooded slopes of Quebrada O-paru-má, between Santa Teresita de Kavanayén and Río Pacairao (tributary of Río Mouak), state of Bolívar, alt. 1065-1220 m., November 20-21, 1944, *Julian A. Steyermark 60371*, "tree 30 feet tall; leaves subcoriaceous, deep green and shining above, paler green below; flowers pale green."

Other collections are VENEZUELA: state of Bolívar: Ptari-tepuí, dense forest along Río Karuai, between base of cerro and first ridge above Río Karuai, alt. 1220-1375 m., November 27, 1944, *Steyermark 60607;* Mount Roraima, southwest-facing slopes bordered by hilly savanna, alt. 1030-1155 m., September 25, 1944, *Steyermark 58592*, "shrub 20-25 feet tall; leaves subcoriaceous, deep green and shining above, pale green below; bracts brown." BRITISH GUIANA: scrub-

savanna, basin of Rupununi River, Yupukari, lat. about 3° 40' N., October 15, 1937, *A. C. Smith 2257,* "slender shrub to 5 m. high; petals greenish white;" dense forest, western extremity of Kanuku mountains, in drainage of Takutu River, alt. 700 m., March 4-22, 1938, *A. C. Smith 3308,* "slender tree 5 m. high; petals and filaments greenish white; fruit red."

Local names in Venezuela: "cawau-ya-yek" and "perumatá." It is reported that this species is used in local medicine.

Although this species closely resembles *E. mucronatum* Benth., it differs chiefly in the much larger stipules which may be fimbriate or 3-setulose at the apex, and in the more conspicuous lateral nerves and secondary veins on the upper and lower leaf surface.

RUTACEAE

Amyris ignea Steyermark, nom. nov.

Amyris simplicifolia Karst., Fl. Colomb. 2: 109. *pl. 158.* 1865, not *A. simplicifolia* Roxburgh, Fl. Ind. 2: 244. 1820.

The next available name, *Amyris maritima* Griseb. (Flora, p. 174. 1859), not Jacq. Enum. Pl. Carib. p. 19. 1760, is also a later homonym.

Diomma fruticosa Steyermark, sp. nov.

Frutex 1-5 m. altus; ramulis juvenilibus breviter puberulis; foliorum rhachi cum petiolo 50-52 cm. longa, brunneo-tomentosa, foliolis suboppositis vel alternis, 14-15-jugis, petiolulis et costa media subtus brunneo-tomentosis 1-2.5 mm. longis, oblongo-lanceolatis vel anguste oblongis, basi obliquis, apice obtuse acuminatis, subcoriaceis, glabris, punctatis, 5-9 cm. longis, 2.5-3.5 cm. latis, margine integro, nervis lateralibus utrinque 17-19, fere angulo recto patentibus, subtus prominulis; floribus non visis; paniculis fructiferis puberulis 35 cm. longis; fructibus compressis, alatis, suborbiculari-reniformibus, basi valde cordatis, apice subtruncatis vel rotundatis, 1.3-1.7 cm. longis, 1.5-2.5 cm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected on rocky savanna bordering Río Karuai, between La Laja and Santa Teresita de Kavanayén, state of Bolívar, alt. 1220 m., November 20, 1944, *Julian A. Steyermark 60820,* "shrub 3-15 feet tall; leaves subcoriaceous, dark green above, pale green below; young rachis and buds deep brown." Also collected in fruit on savanna and shrubby growth, bordering forest of Río Karuai, between Santa Teresita de Kavanayén and base of Ptari-tepuí, alt. 1220 m., November 18, 1944, *Steyermark 60327,* "shrub 6-7 feet tall."

Local name: "marua-yek."

The genus *Diomma,* previously represented by a single species, *D. Ulei* Engler (ex Ule in Bot. Jahrb. **52** Beibl. **15**: 49. 1914; Notiz. **11**: 282. 1931), known from the region of Roraima, is now encountered by this second species in the Ptari-tepuí area. This latter species is a common shrub in the scrub forest of the mesa of Kavanayén. It

is a very striking component of the vegetation because of the solitary woody stems crowned at the summit by the long-pinnate, spreading leaves.

From *D. Ulei* this species differs in its 14-15 pairs of punctate leaflets, which have shorter, more obtuse tips, and shorter petiolules, the rachis, petiolules, and lower midrib more or less cinnamon brown-scurfy, the differently shaped fruit which is 1-1/2 times broader than high, suborbicular-reniform, and more emarginate rather than pointed at the apex, and in the shrubby instead of tree habit of growth.

The large leaf-scars and long-pinnate leaves of this genus resemble some genera, such as *Ailanthus* of the Simarubaceae, in which family it is doubtfully placed by Engler, but the punctate leaves of *D. fruticosa* may show a closer affinity or connection with the Rutaceae, to which family it is here assigned.

Ravenia ruellioides Oliver, var. **ptariana** Steyermark, var. nov.

A typo recedit laminis et floribus majoribus et pedunculis paullo longioribus; laminis plerumque 4.5-6 cm. longis; pedunculis plerumque 2.5-3.5 cm. longis; corolla 3.2-3.3 cm. longa, lobis 0.6-0.8 cm. longis, tubo 2.6-2.7 cm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected on forested south-facing slopes overlying sandstone on "Cave Rock" above "Cave Camp," Ptari-tepuí, state of Bolívar, alt. 1810 m., October 29, 1944, *Julian A. Steyermark 59511*, "shrub 3-5 feet tall; leaves with citrus odor, dark green above, pale green below, firmly membranaceous; corolla deep red."

This variety differs from typical *R. ruellioides* Oliver in having larger leaf-blades and longer corollas and peduncles.

A key to the known entities of *Ravenia* follows:

Flowering peduncles 9-12 mm. long; corolla about 25 mm. long; lower leaf surface more or less strigose ..... *R. Tatei*
Flowering peduncles 15-35 mm. long; corolla usually 25-35 mm. long; lower leaf surface glabrate
  Peduncles averaging 15-25 mm. long; corolla 25-31 mm. long; leaf-blades 2.5-5.5 cm. long ..... *R. ruellioides*
  Peduncles averaging 25-35 mm. long; corolla 32-33 mm. long; leaf-blades 4.5-6 cm. long ..... *R. ruellioides* var. *ptariana*

Zanthoxylum ocumarense (Pittier) Steyerm., comb. nov.

Fagara ocumarensis Pittier, Arboles y Arbustos nuevos de Venezuela. Contr. para la flora de Ven. pp. 120-121. 1929.

Zanthoxylum pallidum Steyermark, sp. nov.

Arbor 10-15 m. alta; ramulis glaberrimis inermibus, foliis glabris subcoriaceis, petiolo communi 20-25 cm. longo, tereti-anguloso glabro inermi, impari-pinnatis, foliolis 3- jugis, 9-12 cm. longis, 3.5-4.5 cm. latis, elliptico-oblongis vel late oblongis, breviter et subobtuse acuminatis, acumine 5-7 mm. longo, basi subacutis, mar-

gine minute atque remote crenulatis, subtus argenteo-viridibus; petiolulis 6-8 mm. longis; floribus et fructibus non visis.

Type in herb. Chi. Nat. Hist. Mus., collected on rich, steep, northwest- and northeast-facing forested slopes above "La Isla," above Tabay, state of Mérida, alt. 2285-2745 m., May 18, 1944, *Julian A. Steyermark 56580,* "tree 30-50 feet tall; bitter-orange scented; leaves subcoriaceous, dull deep green above, silvery pale green below with dull salmon-buff midrib."

Local name: "tuno amarillo."

This species is distinguished at once by the pale, silvery green lower leaf surface, which is not prominently reticulate-veined as in *Z. quinduense* Tul. or *Z. macrospermum* Tul.

Zanthoxylum tachirense Steyermark, sp. nov.

Frutex 6-7 m. altus; ramis teretibus, ramulis glaberrimis inermibus; foliis coriaceis glaberrimis, supra obscure viridibus, subtus pallido-viridibus impari-pinnatis; petiolo communi 9-16 cm. longo, subtereti-anguloso glabro inermi; foliolis 3- jugis, 5.5-9 cm. longis, 1.5-3.5 cm. latis, elliptico-lanceolatis obtusis, basi acutis vel attenuatis, margine integerrimo; petiolulis 3-10 mm. longis; paniculis terminalibus atque axillaribus foliis brevioribus, glabris, 8-9 cm. longis; inflorescentiae ramulis patentibus vel adscendentibus apice multifloris; calycis laciniis ovato-suborbicularibus subacutis, 1.5 mm. longis, 1.5 mm. latis, glabris; petalis 5, 4.5 mm. longis, 2.5 mm. latis, late oblongis obtusis glabris; staminibus 5, petalis aequantibus; filamentis 4.5 mm. longis; antheris 2 mm. longis, 1.5 mm. latis, elliptico-oblongis; ovario pentagyno.

Type in herb. Chi. Nat. Hist. Mus., collected in dwarf forest on slopes below Páramo de la Negra, above La Grita, state of Táchira, alt. 2430-2510 m., July 7, 1944, *Julian A. Steyermark 57111,* "shrub 20 feet tall; leaves coriaceous, deep dark green above, pale green below; rachis brick red; peduncle green; petals greenish white."

This species is distinguished by the unarmed stems and petioles, entire, coriaceous, long-petiolate leaflets, relatively large petals, inflorescence submerged in the foliage, and the glabrity throughout the plant.

SIMARUBACEAE

Picramnia caracasana Engler, forma **tomentella** Steyerm., f. nov.

A typo recedit foliolis adultis subtus dense tomentosis atque supra praesertim sinibus nervorum.

Type in herb. Chi. Nat. Hist. Mus., collected in rich woods, east of El Junquito, distrito Federal, alt. 1980-2130 m., June 25, 1944, *Julian A. Steyermark 57019,* "shrub 10 feet tall; leaves membranaceous, dull green above, dull below; inflorescence nodding."

This is characterized by the persistent dense tomentum on the lower surface of the mature leaflets, and also in the sinuses of the nerves on the upper surface, whereas in typical *P. caracasana* only

the main nerves are tomentose, or glabrate below at maturity.

Picramnia tristamina Steyermark, sp. nov.

Arbor 8-10-metralis; ramulis teretibus gracilibus glabris; foliis membranaceo-chartaceis, 5-7-foliolatis; petiolo communi 9-12 cm. longo, tereti, minute adpresso-tomentello; foliolis supra costa media puberula vel glabra et marginibus minute ciliatis aliter glabris, late ovato-ellipticis vel infimis late ovatis vel suborbiculari-ovatis 4.5-13.5 cm. longis, 2-6 cm. latis, caudato- vel subcaudato-acuminatis, acumine 8-16 mm. longo, basi paullo vel haud obliquis rotundatis, obtusis vel subacutis, terminali basi subacuto, nervis lateralibus utrinque 3-4; petiolulis crassiusculis corrugatis, tomentellis vel glabriusculis, 3-4 mm. longis; ramis floriferis longissimis pendulis dense pilosulis; floribus paucis in glomerulos sessiles distantes consociatis; calycis masc. 5-partiti laciniis ovatis, 1.2-1.5 mm. longis, 0.8-1 mm. latis, obtusis, extrinsecus puberulis; petalis 3, calyce brevioribus, 0.7 mm. longis, 0.5 mm. latis; staminibus 3, brevissimis; filamentis 0.5 mm. longis; antheris 0.25 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected a lo largo del camino de Yavita, Territorio Federal Amazonas, alt. 128 m., January 23, 1942, *Llewelyn Williams 13918*, "arbol de 8 m. de altura con corona de forma irregular; el tronco es moderademento redondo y derecho, 15 cm. de diam., sin ramas por 2 m.; las flores son rosadas o rojozas; la madera de color claro pesada; corteza delgada, de color subido."

Additional collections from Territorio Federal Amazonas are: forest along Base River (Cãno Negro), at southeastern base of Cerro Duida, alt. 225 m., August 23, 1944, *Steyermark 57943*, "tree 30 feet tall; leaves firmly membranaceous-chartaceous, dark green above, dull green below; spikes green, pendent;" and, in woods at Foothills Camp, Esmeralda, Cerro Duida, *Tate 378* (NY).

This is closely related to *P. juniniana* Macbride of eastern Peru. That species has five stamens, truly pentamerous flowers (a collection of *Killip and Smith 3837* from Peru, clearly referable to *P. juniniana*, reveals the pentamerous condition), and the filaments are longer, up to 1.5 mm. long, whereas in *P. tristamina* the stamens number three and the filaments are much shorter.

BURSERACEAE

Protium ptarianum Steyermark, sp. nov.

Arbor 13 m. alta; ramulis 5 mm. diam., novellis fusco-puberulis; foliis 4-5-jugis 15-19 cm. longis; petiolis semiteretibus supra bi-angulosa-applanatis, basi incrassatis, 2.5-6 cm. longis, cum rhachibus petiolulisque densiuscule sed minute pilosis, interjugis 2-2.5 cm. longis, petiolulis semiteretibus canaliculatis utrinque incrassatis 2.5-4 mm. longis; foliolis subcoriaceis late oblongis 3.5-6.5 cm. longis, 2-3 cm. latis, terminalibus minoribus, apice abrupte obtuse acuminatis, acumine ovato-oblongo obtuso 1.5-3 mm. longo, 2-3 mm. lato, basi rotundatis, margine integro, nervis lateralibus utrinque

11-12 fere angulo recto patentibus, infra prominentibus, supra glabris, infra subreticulatis et costa media dense pilosis; ramulis floriferis axillaribus folio multo brevioribus supra basim paniculatim ramosis, 2.5-3.2 cm. longis, ramulis angulosis brunnescenti-pilosis, pedicellis brevibus pilosis; bracteolis 0.7-1.2 mm. longis, ovatis acutis pilosis; floribus 5-meris; calyce cupuliformi ca. 1 mm. longo, lobis late triangularibus; petalis 5, oblongo-triangularibus obtusiusculis, 3.2-3.5 mm. longis, 1.2 mm. latis, extus papilloso-puberulis, intus glabris; staminibus 10; filamentis basi dilatatis 0.9 mm. longis; antheris late oblongis 0.6 mm. longis, 0.4 mm. latis; disco glabro; ovario pubescenti; stylis ovario multo longioribus.

Type in herb. Chi. Nat. Hist. Mus., collected on steep wooded slopes just below dry ridge and shrubby growth, southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 59994*, "tree 40 feet tall; leaves dark green above, dull green below; flower and rachis pale green."

This species is distinguished by its 4-5 pairs of subcoriaceous leaflets, which are short-pointed at tip, broadly rounded at base, and prominently reticulate on the lower surface, the spreading-pilose midrib of the lower leaf surface, the densely tomentose rachis and petiolules, and the short fulvous-tomentulose inflorescence.

It differs from *P. Llewelynii* Macbr. of Peru in the fewer nerves and shorter acumen of the leaflets, and in the papillose-puberulent outer surface of the petals. From *P. Altsonii* Sandwith of British Guiana it may be distinguished by the smaller leaves and leaflets with shorter acumen and fewer nerves, the shorter petiolules, prominently pubescent midrib of the lower leaf surface, and papillose-puberulent outer surface of the petals.

Protium ptarianum var. **angustior** Steyermark, var. nov.

A typo recedit foliolis angustioribus basi attenuatis et petiolulis longioribus, 3-7.5 mm. longis; foliolis anguste oblongis vel oblongo-lanceolatis, 5.5-8.5 cm. longis, 2-2.7 cm. latis, apice obtuse acuminatis, acumine late lineari obtuso 4-7 mm. longo, 2-3 mm. lato, basi subobtusis vel subacutis.

Type in herb. Chi. Nat. Hist. Mus., collected on southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 59987*, "small tree 40 feet tall; leaves chartaceous-subcoriaceous, dark green above, dull green below; rachis, petiolules, and stems covered with rich brown tomentum; buds pale green."

This differs from typical *P. ptarianum* in the narrower leaflets which are more attenuate at the base.

Protium puberulenta Steyermark, sp. nov.

Arbor 11 m. alta; ramulis 5 mm. diam., novellis minute tomentellis; foliis 3-7-jugis 15-23 cm. longis; petiolis semiteretibus supra applanatis basi incrassatis, 2.5-4.5 cm. longis, cum rhachibus petiolulisque inute tomentellis, interjugis 1.7-2.3 cm. longis, petiolulis

semiteretibus canaliculatis 6-9 mm. longis; foliolis subcoriaceis vel coriaceis anguste oblongis vel lineari-oblongis, terminalibus plerumque ellipticis, 6.5-9.5 cm. longis, 1.5-3 cm. latis, apice abrupte caudato-acuminatis, acumine lineari obtuso 6-12 mm. longo, 1.5-2.5 mm. lato, lateralibus basi obliquis subobtusis vel subacutis, terminali basi subacuto, margine integro, nervis lateralibus utrinque 11-21 fere angulo recto patentibus, infra prominentibus, supra glabris, infra minute puberulis praesertim nervis et costa media; ramulis floriferis axillaribus folio multo brevioribus e basi paniculatim ramosis, 1.5-3 cm. longis, ramulis dense tomentellis, pedicellis 1-1.5 mm. longis puberulis; floribus 5- meris; calyce cupuliformi ca. 1 mm. longo, lobis late triangularibus; petalis 5, oblongo-lanceolatis subacutis 3.5 mm. longis, 1.2-1.3 mm. latis, intus et marginibus puberulis; staminibus pistillum excedentibus; filamentis 1 mm. longis; antheris 0.5 mm. longis; disco glabro; ovario paullo puberulo; stylo ovario breviori.

Type in herb. Chi. Nat. Hist. Mus., collected on wooded ravine below edge of mesa, along mesa escarpment between Santa Teresita de Kavanayén and wooded quebrada about 8 kilometers northwest of Kavanayén, state of Bolívar, alt. 1220 m., November 23, 1944, *Julian A. Steyermark 60460* (2 sheets), "leaves and stems fragrant; flowers greenish-yellow; leaves subcoriaceous, deep green above, dull green below."

Also collected on wooded slopes of Quebrada O-paru-má, between Santa Teresita de Kavanayén and Río Pacairao (tributary of Río Mouak), state of Bolívar, alt. 1065-1220 m., November 20-21, 1944, *Steyermark 60368*, "small tree 35 feet tall; leaves coriaceous, deep green and shining above, dull green below."

Local name: "chipoi-yek."

The resin from the bark of this species is used by the native Indians to kindle fires.

This species is characterized by densely fulvous-puberulent young branchlets, the 3-7 pairs of leaflets which are minutely puberulent on the lower leaf surface, and densely puberulent on the nerves and midrib of the lower surface, and by the dense minute puberulence of the petiolules, rachis of the leaves and inflorescence, as well as the inner surface of the petals.

From both *P. Llewelynii* and *P. Altsonii*, discussed previously with reference to *P. ptarianum*, the new species differs in the leaflets puberulent on the lower surface and the puberulous inner surface of the petals.

Trattinickia glabra Steyermark, sp. nov.

Frutex 2.5-3.5 m. altus; ramulis 4 mm. diam. glabris; foliis 2-3-jugis glabris; petiolis semiteretibus 2-4.5 cm. longis, cum rhachibus glabris, interjugis supra subcarinatis 5-7 mm. longis; foliolis ovatis vel elliptico-ovatis 4-9.5 cm. longis, 2.5-3.7 cm. latis, apice subito obtuse acuminatis, acumine anguste oblongo obtuso 5-8 mm. longo, 2.5-3 mm. lato, basi oblique rotundatis, subcoriaceis, glabris,

margine integro, nervis lateralibus utrinque 7-8, utrinque graciliter reticulatis; ramulis floriferis pseudo-terminalibus et axillaribus a basi ramosis folio multo brevioribus 3 cm. longis, ramulis sulcatis glabris, pedicellis brevissimis vel nullis; floribus 3-meris; calyce cupuliformi 3-lobo plerumque glabro 1 mm. alto, lobis suborbicularibus apice rotundatis; corolla carnosa 3-lobata fere glabra, lobis valvatis fere liberis suborbiculari-ovalibus, apice rotundatis, 2 mm. longis, 2 mm. latis; staminibus 6; filamentis basi dilatatis 0.5 mm. longis; antheris suborbicularibus glabris 0.4-0.5 mm. longis; disco annulari 6-lobato glabro; ovario parce puberulo; stigmate subsessili 2-lobo.

Type in herb. Chi. Nat. Hist. Mus., collected on savanna and shrubby growth bordering forest of Río Karuai, between Santa Teresita de Kavanayén and base of Ptari-tepuí, state of Bolívar, alt. 1220 m., November 18, 1944, *Julian A. Steyermark 60312*, "shrub 8-12 feet tall; leaves subcoriaceous, dark green above, dull green below; perianth deep brick; calyx dull green."

In the finely reticulate glabrous leaflets this species resembles *Bursera amplifolia* of Bolivia. It is most closely related to *T. subchoripetala* Swart of the Duida region in having nearly separate corolla lobes, but is distinguished from that species by the smaller flowers, nearly glabrous corolla and calyx (only sparsely puberulous with scattered hairs, not papillate as in *T. subchoripetala*), shorter suborbicular instead of elliptic anthers, and more prominently reticulate leaflets which are broader and more rounded at base.

MELIACEAE

Trichilia ptariana Steyermark, sp. nov.

Frutex vel arbor 7-13-metralis; ramulis novellis puberulentibus vel glabriusculis; foliis petiolatis 5-9-jugis, 11-19 cm. longis; petiolis semiteretibus 3.5-6.5 cm. longis cum rhachibus magis vel minus densiuscule puberulis, interjugis canaliculatis vel angulatis 1-2 cm. longis; foliolis anguste lanceolato-ellipticis vel anguste ellipticis 3-8 cm. longis, 0.8-2.3 cm. latis, apice abrupte caudato- vel obtuse longe acuminatis, acumine lineari obtuse 6-12 mm. longo 1.5-3 mm. lato, basi acutis vel cuneatis obliquis, chartaceis vel chartaceo-subcoriaceis, supra nitidis costa media glabriuscula vel minute puberula aliter glabris, subtus costa media puberula ceterum glabriusculis vel pilis distantibus minute puberulis, margine integro, nervis lateralibus utrinque 15-20; calyce profunde 5-dentato 1.25-1.5 mm. longo, lobis late triangularibus acutis extus hirtellis; corolla non visa; ramis fructiferis terminalibus vel axillaribus 10-15 cm. longis, ramulis magis vel minus dense puberulis; capsulis suborbicularibus vel ovoideis subito apiculatis nitidis rubris atque viridibus suffusis 4-7 mm. stipitatis monospermis; valvis 9-11 mm. longis, 8-9 mm. latis, extus glabris carnosis; seminibus obovoideis apice rotundatis 8-9 mm. longis, 6 mm. latis, arillo carnoso indutis; cotyledonibus carnosis 6-7 mm. longis, 4.5-5 mm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected on steep wooded

slopes just below dry ridge and shrubby growth, southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 59979,* "tree 40 feet tall; leaves chartaceous-subcoriaceous, deep green above, dull green below; fruit shining, dull red suffused with dull yellow green."

Other collections, all from Venezuela, are state of Bolívar: rich woods bordering quebradas at base of southeast-facing slopes, Ptari-tepuí, alt. 1585-1600 m., November 10-11, 1944, *Steyermark 60034,* "small tree 35 feet tall; leaves chartaceous, dark green above, dull green below;" woods, upper slopes of Carrao-tepuí, alt. 2130-2430 m., December 7, 1944, *Steyermark 60877,* "tree 25-30 feet tall; leaves subcoriaceous, dark green above, pale green below; rachis dull green on old stems." Territorio Federal Amazonas: moist woods at base of vertical bluff at edge of woods, Cerro Duida, southeastern-facing sandstone slopes near Caño Negro (tributary of Caño Iguapo), alt. 1095-1520 m., August 26, 1944, *Steyermark 58024,* "shrub 20 feet tall or epiphytic vine on *58023;* leaves firmly membranaceous-chartaceous, dark green and shining above, dull green below; fruit pendent, shining, dull green, suffused with dull red."

Local names on Ptari-tepuí: "warin-yek" and "ye-lu-wak-yek." The wood is very hard.

This species is characterized by the dull red exocarp of the glabrous fruit, by the finely tomentulose rachis of the leaves, petiolules, and inflorescence, and by the obtusely long-caudate, glabrate leaflets.

Trichilia subsimplex Steyermark, sp. nov.

Arbor 15-metralis; ramulis striato-rugulosis glabris; foliis petiolatis simplicibus vel 1-jugis; foliolis subcoriaceo-chartaceis oblongo-ellipticis, apice obtuse acuminatis, acumine 6-8 mm. longo 5-8 mm. lato, basi acuminatis vel cuneatis, terminalibus 20-25 cm. longis 10-12.5 cm. latis, in petiolum decurrentibus vel subsessilibus, inferioribus minoribus ovato-ellipticis 8 cm. longis 4.5 cm. latis, subtilissime pellucido-punctulatis, supra glabris subtus plerumque glabris vel ad nervos parce puberulis, nervis lateralibus utroque 11-12 subtus prominulis patulo-adscendentibus; rhachidi supra canaliculata biangulata 2.5-6 cm. longa supra praecipue hirtella; folioli terminalis petiolulo 0.5-1.8 cm. longo; paniculis fructiferis a basi 2-3-fidis 1.5-3 cm. longis; calyce profunde 4-dentato, laciniis ovatis acutis extus puberulis; capsulis monospermis ovato-triquetris vel elliptico-ovoideis extus dense flavido-tomentosis, 11-13 mm. longis subsessilibus; seminibus ovoideis 9-11 mm. longis 6-7 mm. latis, basi arillo membranaceo vestitis.

Type in herb. Chi. Nat. Hist. Mus., collected in forest at base of southeastern slopes, Cerro Duida, along Caño Negro (tributary of Caño Iguapo), Territorio Federal Amazonas, alt. 260 m., August 28-29, 1944, *Julian A. Steyermark 58061,* "tree 45 feet tall; leaves subcoriaceous-chartaceous, dark green above, dull green below; fruit olive green, elliptic-ovoid."

This species is related to *T. macrophylla* Benth. and *T. flava* C.

DC., from which it differs in its subsimple or bifoliate to trifoliate leaves, which have a short rounded to obtuse acuminate tip instead of one which is acute or cuspidate. In *T. subsimplex* the lateral pairs of nerves average 11-12 on each side, whereas in the other two species mentioned they range from 12-14 pairs. The capsules and seeds in *T. subsimplex* are larger, and the leaf scars subtending the base of the fruiting inflorescences are conspicuous and fuscous-tomentose.

MALPIGHIACEAE

Banisteria alternifolia Steyermark, sp. nov.

Liana, partibus novellis glabratis, ramis teretibus, internodiis 2.5-5 cm. longis; foliis alternis coriaceis ovatis basi obtusis, apice obtusis vel acuminatis, 5-7.5 cm. longis, 2.5-3.5 cm. latis, utrinque glaberrimis et prominente reticulatis, supra atroviridibus atque lucidis, subtus basi 2-glanduliferis; petiolis glabris 7-12 mm. longis; stipulis basi petioli affixis lanceolatis acutis 2.25-2.75 mm. longis; strigilloso-pubescentibus; paniculis axillaribus valde elongatis racemiformibus, paniculorum rhachidi adpresso-pubescente; paniculis floriferis 1.5-2.2 dm. longis, pedunculis 5.5-10 cm. longis; axibus racemosis 4-13-floris, 2.5-5.5 cm. longis; pedicellis 2.5-5 mm. longis sericeis; bracteis lanceolatis acutis 4-5 mm. longis, adpresso-pubescentibus; bracteolis late ovatis acutis vel acutiusculis 1 mm. longis; floribus immaturis visis; sepalis suborbicularibus, apice rotundatis, glandulas orbiculares 6-7, 1.8 mm. longas 2-2.3 mm. latas superantibus; petalis luteis fimbriatis, quinto glanduloso-ciliato, limbo (immaturo) suborbiculari-galeiformi 4-4.5 mm. longo 4-4.5 mm. lato; androeceo zygomorphico; staminibus 10 omnibus fertilibus; antheris suborbicularibus glabris; stylis rectis glabris, apice simpliciter truncatis, vertice ipso orbiculari-capitellato vel subrhomboideo gynixiferis; ovario glabro; samaris non visis.

Type in herb. Chi. Nat. Hist. Mus., collected at base of limestone bluffs, Cerro de la Cueva de Doña Anita, south of and bordering valley of Caripe, state of Monagas, alt. 1100-1200 m., April 7, 1945, *Julian A. Steyermark 61914*, "liana on top of tree; leaves alternate, coriaceous, dark green and shining above, pale green below; rachis pale green; calyx rich green; petals yellow."

This unusual species with alternate leaves is the first one of this family from the New World to come to the attention of this author. A few genera with alternate leaves are known from the Old World. In addition to the unusual leaf-arrangement, this species possesses small coriaceous leaves which are conspicuously reticulate-nerved on both surfaces, and greatly elongated inflorescences. The straight styles stigmatose at the truncate-capitellate apex, fimbriate petals, 10 fertile stamens of the zygomorphic androecium, discrete glands of the sepals, and the evidence of a dorsal wing with thickened upper and thinner lower margin on the young ovary, associate this species most logically with the genus *Banisteria*.

Blepharandra cretacea (Gleason) Steyermark, comb. nov.

Byrsonima cretacea Gleason, Bull. Torr. Bot. Club **58**: 378. 1931.

In assigning this plant to *Byrsonima*, Gleason was naturally led by the appearance of the flowering material (*Tate 533*), collected on the summit of Mount Duida, with its simple racemes and elongated unbranched pedicels. By good fortune, the present author made topotypic collections of what proved to be the same species as originally collected by Tate; two collections were assembled from the summit of Duida, one in the valley forest (*Steyermark 58126*), the other on the drier ridges (*Steyermark 58191*). Tate mentions (Bull. Torr. Bot. Club **58**: 379. 1931) in a footnote that this *Brysonima cretacea* is "a common straggly small tree with long weak ascending branches. It is widely distributed in the slope forest and bush, being equally common at Provisional Camp and among the *Tyleria* woods at Central Camp," but examination of *Steyermark 58191*, at first glimpse almost like *Steyermark 58126*, shows that it differs from *58126* in having a branched paniculate type of inflorescence with different pubescence. Fortunately, fruiting material of this *58191* is at hand. It displays a dryish type of fruit, splitting up into three nutlets, a character belonging to *Blepharandra* and tribe Galphimieae, rather than a fleshy drupe as in *Byrsonima* of tribe Malpighieae. There is no question but that *Steyermark 58191* and *58126* are congeneric. Differences between *58191* and *58126* are considered below as varietal in category. It may be that with additional material and further field observations the two types, one with apparently simple racemose ferruginous or reddish-brown inflorescences with close dense tomentum, and the other with branched paniculate paler brown inflorescences with looser and longer pubescence, may eventually have to be considered as distinct species. For the present, however, in view of the very close resemblance of the two types and their association together on the summit of the same mountain, they are retained as varieties of one another.

Therefore, on the basis of the fruiting material (*Steyermark 58191*) discussed above, it is obvious that Gleason's *Byrsonima cretacea* is actually a *Blepharandra*, and should so be considered.

Blepharandra cretacea, var. **composita** Steyermark, var. nov.

A typo differt praesertim racemis compositis, inflorescentiae pilis pallidioribus laxioribusque; foliis junioribus utrinque brunneo-villosis, pilis 2-3 mm. longis; inflorescentia composita, ramusculis 1.3-1.7 cm. longis, racemosis, pedicellis floriferis 6-10 mm. longis, pedicellis fructiferis ad 12 mm. longis; pedicellis ramusculis et pedunculis ramusculis et pedunculis dense brunneo-villoso-lanulosis, pilis patentibus 1-2 mm. longis; petalis pallido-roseis vel albidis, laminis late ovatis vel suborbicularibus erosis 6.5 mm. longis, 5.5 mm. latis, unguibus 2.5-3 mm. longis; filamentis glabris, 3.2-3.5 mm. longis, infra medium 0.5-0.6 mm. latis; connectivo verruculoso, anthera longiori, 1.4 mm. longo; thecis 1.2 mm. longis apice introrse 5-7-barbatis, ceterum glabris; ovario glabro; stylis subulatis 4.5-5 mm. longis; drupa ovoidea 3 mm. diametro, 3-spermo; seminibus 2.5 mm. longis, 2 mm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected in drier parts of

ridge, Brocchinia Hills, summit of Cerro Duida, Territorio Federal Amazonas, alt. 1700-1980 m., September 1, 1944, *Julian A. Steyermark 58191*, "shrub 4-5 feet tall; pubescence of peduncles and pedicels looser and paler brown; petals pink to white."

Although at first glance this plant appears to be practically the same as *Blepharandra cretacea* (*Byrsonima cretacea* Gleason) from the summit of Duida, especially as regards the distinctive ovate-oblong deeply cordate leaves covered on the lower surface with a continuous chalky coating, closer examination, not only in the field, but in the herbarium, reveals several differences. The most noteworthy of these differences is the structure of the inflorescence, which is not simply racemose as in *Blepharandra cretacea* and most of the genus *Byrsonima*, but is paniculate throughout, each branch of the inflorescence being racemose. The color and abundance of the pubescence is different as well; in *Blepharandra cretacea* the peduncles and pedicels have a close, dense, ferruginous tomentum, whereas in *m. cretacea* var. *composita* the hairs on the peduncles and pedicels are paler brown and longer, imparting a more spreading or loose type of pubescence. Furthermore, the connective exceeds the tip of the anther cells by 0.5 mm. in length, while in *B. cretacea* the connective only slightly exceeds the tip of the anther cells, they being approximately the same length. In *B. cretacea* the anther cells are 1.4 mm. long with 6-8 or more stiff introrse hairs 0.6-0.8 mm. long at tip, whereas in *B. cretacea* var. *composita* the anther cells are smaller, 1.2 mm. long and usually have only 5-7 introrse hairs only 0.5 mm. long. The filaments in *B. cretacea* var. *composita* are slightly smaller than in *B. cretacea*.

It is to be noted that the new entity was collected on "drier parts of the ridge," whereas typical *B. cretacea*, represented by *Steyermark 58126* was collected in a wetter or more humid environment, i.e., in the "valley forest between Central Camp and Brocchinia mills" at a somewhat lower elevation on the summit. Whether or not such variations of ecological conditions are associated with or responsible for the morphological differences cannot be stated at the present time. It is possible that in view of the number of differences stated above, the new plant might better be considered a distinct species. However, since foliar and floral morphology are apparently similar, the differences encountered are at present viewed as varietal, differing in degree and quantity (proliferation of floral axes, longer and paler hairs) rather than in quality.

The statement was made in the original description of *Byrsonima cretacea* Gleason that the leaves of *Tate 533* are 'peppered with brown' beneath and that "this appearance proves to be caused by the copious growth of an alga." In the *Steyermark 58191* collection a blackish or dark epiphyllous growth on the leaves was noted and submitted to Dr. Francis Drouet for examination; he has pronounced it to be a mycelium belonging to a fungus.

Blepharandra ptariana Steyermark, sp. nov.

Frutex 1.6-3.1 m. altus; ramis glabratis, internodiis 2.5-4 cm.

longis; petiolis 4-7 mm. longis, crassis, supra canaliculatis, adpresso-pubescentibus demum glabratis; laminis chartaceo-coriaceis ovato-oblongis vel late oblongis, apice rotundatis basi cordatis vel subcordatis, 4.5-8.5 cm. longis, 2.5-6 cm. latis, supra glabris, subtus cretaceo-pruinosis vel junioribus ferrugineo-tomentosis, subtus nervo medio prominenti, nervis primariis utrinque 16-20 vix prominulis, tenuiter dense areolatis; paniculis triplo compositis multifloris 9.5-13 cm. longis, 2-3.5 cm. latis, pedunculo communo 4-5 cm. longo, axibus primariis adscendentibus 5-9 mm. longis, pedicellis 4-6 mm. longis; inflorescentiae rhachidi, pedunculo, axibus pedicellisque densissime fulvo- vel subferrugineo-villosis; floribus 1.3-1.5 cm. diametro; sepalis extus villosis, intus glabris, apice revolutis, 4.5 mm. longis, glandulis usque 10 ovalibus 1-1.5 mm. longis; petalis albidis vel flavescentibus glaberrimis, laminis suborbicularibus paullo eroso-denticulatis rotundatis, 4-5 mm. longis, 3.5-5 mm. latis, unguibus 1.5-2 mm. longis; staminibus subaequalibus, filamentis 1.5-3 mm. longis, pilis longis erecto-patentibus 1.5-2.5 mm. longis a basi ad apicem ciliatis; antheris oblongis 1.5-1.7 mm. longis introrsis, pilis multis suberectis vel adscendentibus subrigidis rufescentibus 0.6-0.8 mm. longis a basi ad apicem cinctis et barbatis ceterum glabris; ovario 1.8 mm. longo glabro; fructibus 2.5 mm. longis, 2.5 mm. latis glabris.

Type in herb. Chi. Nat. Hist. Mus., collected in savanna and shrubby growth bordering forest of Río Karuai, between Santa Teresita de Kavanayén and base of Ptari-tepuí, state of Bolívar, alt. 1220 m., November 18, 1944, *Julian A. Steyermark 60310*, "shrub 5-10 feet tall; leaves coriaceous-chartaceous, deep green above, gray-silvery below; petals white; glands and calyx dull green; rachis and pedicels dull brown."

Also collected in scrubby forest on rocky open portion of plateau on southeast-facing slopes, Ptari-tepuí, alt. 1600 m., November 1, 1944, *Steyermark 59623*, "common shrub 5-10 feet tall; leaves suberect, chartaceous-coriaceous, deep green above, blue-silvery below on mature leaves, fulvous-subferruginous below over a silvery surface on young leaves; rachis and pedicels fulvous-brown; petals creamy to dull white."

The new species differs from *B. hypoleuca* (Benth.) Griseb. in its smaller leaves, more closely crowded inflorescence with shorter pedicels and primary branches having denser and longer pubescence, somewhat smaller petals, shorter anther cells with shorter hairs. The fruit is similar to that of *B. cretacea* var. *composita* of the summit of Duida. In fact, that variety with paniculate inflorescence is definitely intermediate between the simple inflorescence of *B. cretacea* and the compound type encountered in *B. hyp, leuca* and *B. ptariana*.

Burdachia Duckei Steyermark, sp. nov.

Arbor parva, ramulis glabris, internodiis 1.5-2.5 cm. longis; foliis coriaceis late oblongis, elliptico-oblongis, vel ovato-oblongis, 5.5-9.5 cm. longis, 2.5-4.5 cm. latis, apice obtusis vel rotundatis, basi

obtusis vel acutiusculis, supra nervo medio plerumque manifeste puberulo vel glabrata ceterum glabris, subtus adpresso-pilosulis vel glabratis ad basim costae 2 glandulis nigris instructis, dense minute reticulatis, marginibus subrevolutis, utrinque nerviis lateralibus 7-10 subtus paullo prominulis; petiolis rufo-puberulis vel glabratis, supra canaliculatis, 8-10 mm. longis; stipulis ovatis 4 mm. longis acutiusculis sericeis; racemis 3 apice ramulorum confertis dense rufo-tomentosis 4-6 cm. longis; pedunculis 1.5-2 cm. longis, dense rufo-tomentosis, pedunculis primariis 1-2 mm. longis; pedicellis parce adpresso-pilosulis 6-8 mm. longis patentibus; bracteis bracteolisque confertis imbricato-amplexicaulibus suborbicularibus vel ovatis obtusis vel acutis, 1-2 mm. longis, parce adpresso-pilosulis vel glabratis, glandulis orbicularibus 0.8-1.1 mm. diam.; sepalis late suborbicularibus apice rotundatis glabris, glandulas 10 obovoideas 1.2-1.3 mm. longas 2.5 mm. latas superantibus; petalorum 4 lateralium limbo orbiculari-galeiformo apice rotundato 5 mm. longo 4.5 mm. lato, marginibus subintegris, ungue 3 mm. longo; quinti suborbiculari apice rotundato 3-3.3 mm. lato, crassissimo-glanduloso, marginibus 5-6 glandulis substipitatis basalibus conspicuis ceterum glandulis minutis, ungue crasso 2.8 mm. longo, 1 mm. lato; filamentis 1.5-1.7 mm. longis, 0.6-0.7 mm. latis glabris; antheris 2-2.2 mm. longis, connectivi appendicula malleiformi 2-2.2 mm. longa, loculos 0.8-1 mm. superante et angulo subrecto versus dorsum geniculata; ovario pyramidato dense rufo-hirtello, stylis apice paullo incurvis (Fig. 48).

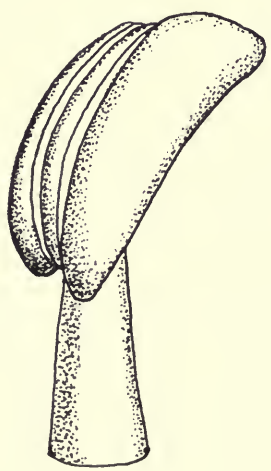

FIGURE 48

Burdachia Duckei Steyermark. Stamen (X 26).

Type in herb. Chi. Nat. Hist. Mus., collected in Brazil at Manaos, Igarape da Cachoeira Grande, igapó, July 14, 1937, *A. Ducke 522*,

"arbor parva; flor. roseis; staminibus flavis."

This species may be distinguished by the leaves finely reticulate on both surfaces, the lower leaf surface usually finely appressed-pilosulous, short densely rufous-tomentose racemes, densely rufous-tomentose ovary, the upper portion of the connective turned outward subhorizontally (malleiform) and exceeding the anther cells.

Burdachia Williamsii Steyermark, sp. nov.

Arbor 8-10-metralis, ramulis glabris, internodiis 1.5-3 cm. longis; foliis coriaceis, anguste vel late oblongis, elliptico-oblongis, vel ovali-oblongis, 5.5-14 cm. longis, 2.2-5.5 cm. latis, apice obtusis vel rotundatis, basi obtusis vel subacutis, supra nervo medio parce puberulo vel glabrato ceterum glabris, subtus parce adpresso-pilosulis vel glabris, ad basim costae 2 glandulis instructis, dense minute reticulatis, marginibus subrevolutis, utrinque nervis lateralibus 7-10 subtus paullo prominulis; petiolis paullo subsericeis vel glabratis, supra canaliculatis 6-17 mm. longis; stipulis ovatis 4-5 mm. longis acutiusculis sericeis, marginibus hirtellis; racemis 3 apice ramulorum confertis parce sericeis vel subglabratis 5-15 cm. longis; pedunculis 1.5-4.5 cm. longis rufo-sericeis; pedicellis subglabratis 8-13 mm. longis patentibus; bracteis bracteolisque confertis imbricato-amplexicaulibus suborbicularibus vel ovatis obtusis vel acutis, 1-2 mm. longis, subglabratis, glandulis orbicularibus 0.8-1.1 mm. diam.; sepalis late suborbicularibus, apice rotundatis glabris, glandulas 10 obovoideas 1.5 mm. longas 2.5 mm. latas superantibus; petalorum 4 lateralium (immaturorum) limbo orbiculari-galeiformi apice rotundato 4 mm. longo, 4.5 mm. lato, marginibus subintegris, ungue 1.5 mm. longo; quinti ovato-suborbiculari apice rotundato 3 mm. longo, 2.6-2.8 mm. lato, crassissimo-glanduloso, marginibus 6-7 glandulis substipitatis basalibus conspicuis ceterum glandulis minutis, ungue crasso; filamentis (immaturis) glabris; antheris (immaturis) 2.6 mm. longis, connectivi appendicula haud vel non malleiformi 2.5 mm. longa, loculis 0.8-1 mm. superante recta; ovario prismatico-anguloso glabro; stylis apice fere rectis paullo incurvis; nuce (immaturo) late conico (Fig. 49).

Type in herb. Chi. Nat. Hist. Mus., collected at Maroa, Río Guainía, Territorio Federal Amazonas, alt. 127 m., 1942, *Llewelyn Williams 14321.*

Also collected at same locality, en la margen arboreada y periodicamento inundata del Río Guainía, alt. 127 m., February 21, 1942, "arbol de 8 á 10 m. de alt. torcido con ramas colgantes sobre el río; infl. terminal, colgante, de flores amarillas a rosadas; el tronco bifurcado ó trifurcado en la base; la corteza morenisca, delgada y el liber rosado colorado; la albura amarillo pálido y el duramen rosadisco."

This species is much like *B. Duckei* Steyermark, described above, but the ovary is completely glabrous instead of densely hirtellous, the upper portion of the connective is erect or nearly so, and not turned outward subhorizontally (malleiform) as in *B. Duckei.* The

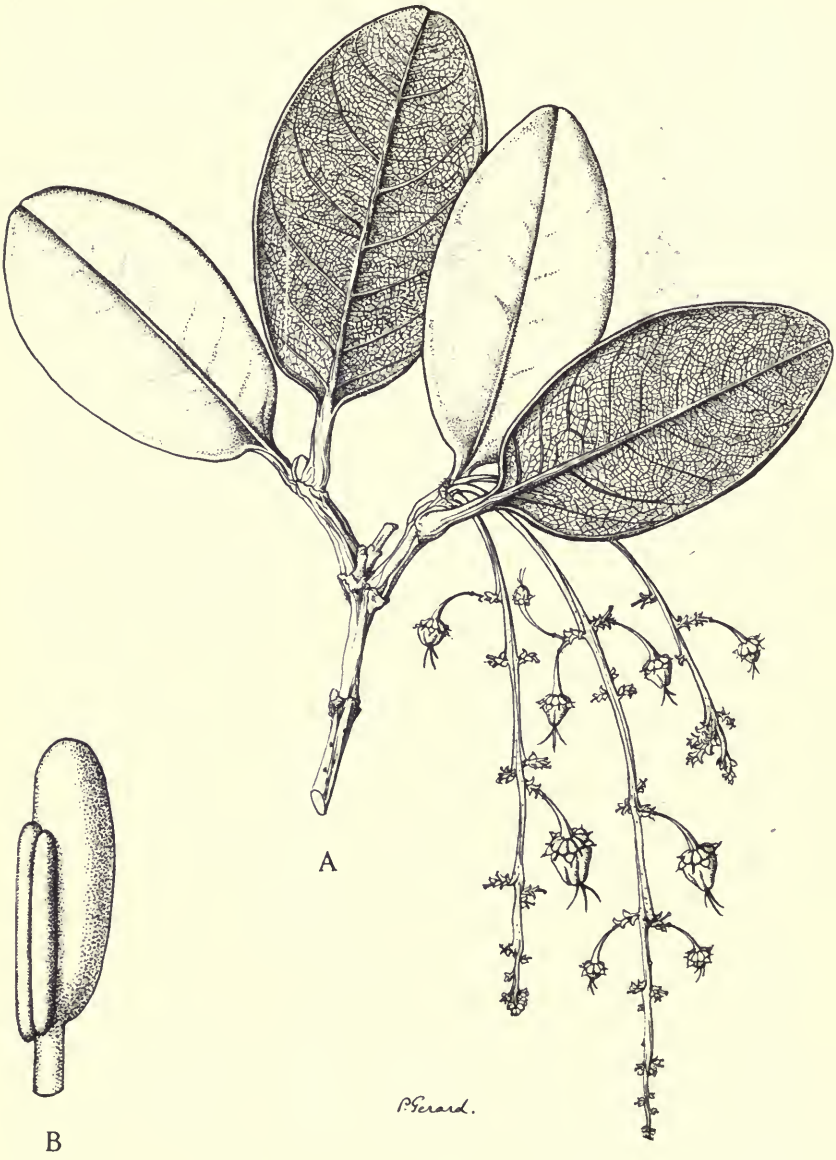

FIGURE 49

Burdachia Williamsii

A, Habit of flowering branch (X 2/3), B, Stamen (X 16).

racemes in *B. Williamsii* are more elongated, more sparsely sericeous to glabrate, and the pedicels are longer. The leaves in the two species are nearly alike.

Byrsonima bolivarana Steyermark, sp. nov.

Arbor 11-metralis, ramulis annotinis rufo-subsericeis, ceterum glabris, internodiis 0.7-1.5 cm. longis; foliis coriaceo-chartaceis obovatis vel late ellipticis 4.5-12 cm. longis 2.5-7 cm. latis, apice rotundatis vel subito obtuse subacuminatis vel obtuse acuminatis, basi angustatis subcuneatis subdecurrentibus; petiolis 1-1.5 cm. longis rufo-sericeis vel glabratis, marginibus revolutis, nervo medio prominenti et nervis lateralibus utrinque 6-7 arcuato-adscendentibus curvatis subtus valde prominentibus, supra impressis vel sulcatis, novellis utrinque rufo-tomentosis demum supra glabratis subtus pallido- vel rufo-strigillosis; stipulis connatis ovatis acutis 5 mm. longis rufo-sericeis vel glabratis; racemis rufo-tomentosis 9-11 cm. longis; pedunculo 2.5-3 cm. longo; pedicellis solitariis usque ad 7 mm. longis rufo-tomentosis; bracteis et bracteolis patentibus caducis linearibus vel lineari-lanceolatis obtusis vel subacutis 5-7 mm. longis 1-1.1 mm. latis dense rufo-tomentosis; sepalis late triangulari-ovatis obtusis extus dense rufo-tomentosis, intus prope margines rufo-tomentosis ceterum glabris, glandulas 10 rosaceas obovoideo-oblongas 2 mm. longas 2.8 mm. latas superantibus; petalis (immaturis) reniformi-cochleariformibus unguiculatis, marginibus subintegris, limbo 3.5-5 mm. longo, 4.5-5 mm. lato, ungue 1.8 mm. longo; antherae loculis (immaturis) anguste oblongis glabris 0.5-0.9 mm. longis, connectivi appendiculata late oblonga 1.5 mm. longa loculos duplo superante; ovario glaberrimo; drupa globosa flavido-viridi 1-1.2 cm. diam. (sicca 8 mm. diam.).

Type in herb. Chi. Nat. Hist. Mus., collected in scrubby woods, vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and Sororopán-tepuí, state of Bolívar, alt. 1615 m., November 15-17, 1944, *Julian A. Steyermark 60272*, "tree 35 feet tall; leaves coriaceous-chartaceous, deep green above, dull green-gray below; fruit globose, shining, yellow green, 1-1.2 cm. in diameter; glands pink; rest of corolla ferruginous-brown; fruit edible."

Local name: "can-wai-ya-yek."

This species greatly resembles *B. chalcophylla* Niedenzu of Mount Roraima, but is distinguished by the glabrous ovary and rounded appendages and tips of the anther-cells, *B. chalcophylla* having a densely sericeous-pubescent ovary and uncinate-recurved appendages and apiculate anther-cells. It is distinguished from *B. carraoana*, described below, by the glabrous ovary, larger leaves, and anthers.

Byrsonima carraoana Steyermark, sp. nov.

Frutex 3.2 m. altus, ramulis 2.5-5 mm. diam. glabratis, partibus novellis rufo-tomentosis, internodiis 3-12 mm. longis; foliis subcoriaceis obovatis vel elliptico-obovatis 4.5-7 cm. longis 1.5-4 cm. latis, apice subito obtuse subacuminatis, basi acutis decurrentibus; petiolis crassis 5-7 mm. longis rufo-strigillosis vel glabratis, mar-

ginibus subrevolutis, nervo medio prominenti et nervis lateralibus utrinque 6-7 arcuato-adscendentibus curvatis subtus prominentibus supra subplanis, novellis utrinque rufo-sericeis permox supra glabratis vel parce pallido-strigillosis, subtus plerumque inconspicue pilis brevibus adpressis pallidis strigillosis vel subglabratis; stipulis distinctis ovatis acutis 2-2.5 mm. longis; racemis rufo-tomentosis 4.5-5.5 cm. longis 2 mm. latis angulosis; pedunculo 2-2.5 cm. longo; pedicellis solitariis erecto-adscendentibus rectis rufo-tomentosis 7-9 mm. longis; bracteis bracteolisque adscendentibus lineari-lanceolatis vel spatulato-lanceolatis subacutis 3-3.5 mm. longis 1 mm. latis rufo-tomentosis; sepalis triangulari-ovatis obtusis, extus dense sericeo-pubescentibus vel hirtellis, intus per margines sericeo-pubescentibus vel hirtellis, ceterum glabris, glandulas 10 rosaceas obovoideo-oblongas (1.5-2 mm. longas) 2-3.5 mm. longas 2-3 mm. latas superantibus; petalis pallido-rosaceis, marginibus albidis, reniformi-cochleariformibus unguiculatis, limbo 2.8-3 mm. longo 3.5-4.5 mm. lato, ungue crassiusculo 2 mm. longo 0.6-0.7 mm. lato; antherae loculis lineari-oblongis glabris 0.9-1 mm. longis, connectivi appendicula late oblonga verruculosa 1.3-1.6 mm. longa 0.6-0.7 mm. lato, loculos sesqui vel duplo superante, latitudinem antherae aequanti; filamentis albidis 2-2.5 mm. longis 1 mm. latis, latitudinem antherae aequantibus basi pilosis; ovario conico-ovoideo, inferne sericeo 1.7 mm. longo; drupa flavo-viridi lucida ovoideo-globosa 8-10 mm. longa 9-10 mm. diam.

Type in herb. Chi. Nat. Hist. Mus., collected on summit of Carrao-tepuí, state of Bolívar, alt. 2470-2500 m., December 7, 1944, *Julian A. Steyermark 60883*, "shrub 10 feet tall; leaves subcoriaceous, deep green above, dull paler green below with brown hairs or tomentum on young leaves; rufous tomentum on young stems and ascending-erect pedicels; glands rose; petals salmon-pink with white margins; filaments white; anthers greenish-yellow; fruit yellow-green, shining, ovoid-globose."

This species is apparently a member of the Subgenus *Macrozeugma* Niedenzu, but the combination of sericeous-pubescent ovary, glabrous anther-cells, and broadly oblong connective two to two and one-half times as long as the anther-cells keeps it from being placed conveniently in any of Niedenzu's subcategories. It is further distinguished by the small leaves which are pale strigillose and conspicuously nerved on the lower surface at maturity, the rufous-tomentose peduncles and rachis, as well as the elongate, erect-ascending, rufous-tomentose pedicels.

Byrsonima Luetzelburgii Steyermark, nom. nov.

Byrsonima cretacea Niedenzu, Repert. Sp. Nov. **33**: 71. 1933, not *Byrsonima cretacea* Gleason, Bull. Torr. Bot. Club **58**: 378. 1931.

Glandonia Williamsii Steyermark, sp. nov.

Frutex vel arbor 2-7-metralis, ramulis glabris, internodiis 2.5-5 cm. longis; foliis coriaceis oblongo-ellipticis vel oblongo-lanceolatis, 9-18 cm. longis, 3.5-6.5 cm. latis, apice obtusis vel acutis, basi

plerumque obtusis vel paullo subacutis, utrinque glabris dense reticulatis, marginibus subrevolutis, nervis lateralibus utrinque 9-15 non prominulis; petiolis crassis glaberrimis 1-1.8 cm. longis; stipulis lanceolato-linearibus rigidis striatis 13-16 mm. longis glabratis caducis; racemis terminalibus multifloris compositis 8-10 cm. longis rufo-tomentosis; pedunculo 2 cm. longo; pedunculis fructigeris primariis 4 mm. longis sericeo-pubescentibus, secundariis tertiariisque 0.3-1 mm. longis; pedicellis 6-7 mm. longis rufo-tomentosis; bracteis bracteolisque coriaceis persistentibus; bracteis gyriferis ovatis 3-4 mm. longis subobtusis, extus sericeis; bracteolis subovatis vel suborbiculari-ovatis 2 mm. longis, extus sericeis; gemmis subconicis 3-5 mm. longis (immaturis); sepalis suborbicularibus apice rotundatis, extus sericeis intus glabris, glandulas 10 obovoideas dense confertas 2 mm. longas 2 mm. latas superantibus; petalis "luteis vel pallido luteis" (fide Williams) glaberrimis, petalorum 4 lateralium limbo (immaturo) suborbiculari-galeiformi 2.5-3 mm. longo 2.5-3 mm. lato, marginibus integerrimis, ungue 1.5 mm. longo; quinti ovato-oblongo (immaturo) apice rotundato 2.5-3 mm. longo 2 mm. lato, ungue 1 mm. longo, marginibus inferioribus undulatis; filamentis brevibus (immaturis) 0.3-0.5 mm. longis rufo-pubescentibus pilis usque ad 1.5 mm. longis; antheris lineari-subulatis 3.5-4 mm. longis, loculis glaberrimis linearibus apice in aristas breves conicas connectivum superantes usque 0.2 mm. longas; ovario glaberrimo, stylis gracilibus 4 mm. longis glabris apice uncinatim reflexis; nuce abortu monosperma crasso-cylindracea vel prismato-oblonga, 22 mm. longa 9 mm. diam. apice angustata conica, longitrorsum sulcata; pericarpio lignoso, pariete 1 mm. crasso (Fig. 50).

Type in herb. Chi. Nat. Hist. Mus., collected en las sabanetas periódicamente anegadas, Yavita, Territorio Federal Amazonas, alt. 128 m., February 2, 1942, *Llewelyn Williams 14154*, "arbol pequeño de 2-3 m. de flores amarillas; cascara áspera; madera pesada, dura con albura rosado claro y duramen poco mas oscuro."

Additional collections, likewise from Territorio Federal Amazonas, are: en las sabanetas que se aniegan periódicamente en la boca del Caño Ichana, Bajo Caño San Miguel, Río Guainía, alt. 125 m., March 25, 1942, *Williams 14884*, "arbol de 8 m. con corona de forma irregular de ramas torcidas, ramificando desde la base; el tronco 15 cm. de diám., a veces sin ramas por la mitad de la altura; el fruto verde obscuro, terminal; la corteza de color pardo, algo excamosa, áspera, delgada, el liber rojizo; la albura de color claro, y el corazón grueso de color pardo, susceptible a los ataques de insectos;" and, en las sabanetas periódicamente anegadas cerca de la margen del Caño Temi, Yavita, alt. 128 m., March 2, 1942, *Williams 14168*, "arbusto de 2 m.; fls. amarillo pálido, en espigas; corteza aspera, marrón-grisaceo, el liber más claro; albura rosadizco y el duramen mas oscuro."

Local name: "mecla."

This is the second species of this genus to be described, the other, *G. macrocarpa* (Benth.) Griseb., occurring in Brazil along the

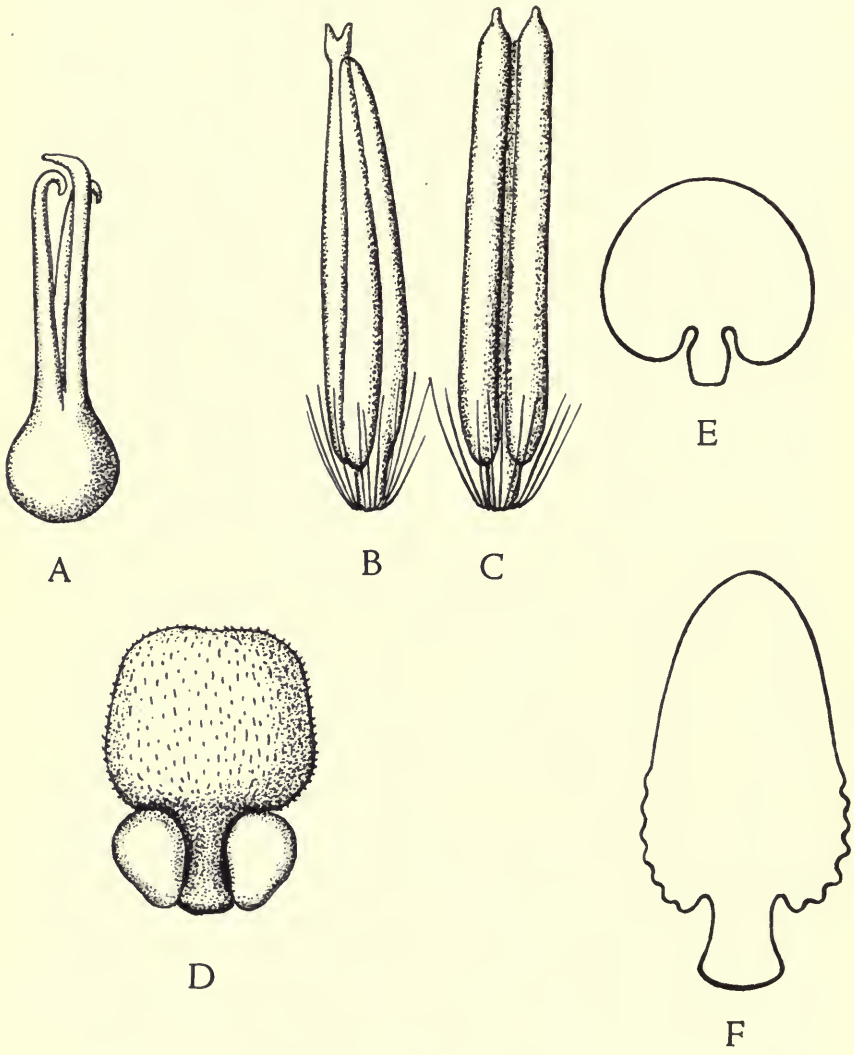

FIGURE 50

Glandonia Williamsii

A, Ovary and styles (X 8); B, Lateral view of stamen (X 14); C, Ventral view of stamen (X 14); D, Sepal with glands (X 1.6); E, Ordinary petal (X 6); F, Fifth petal (X 14).

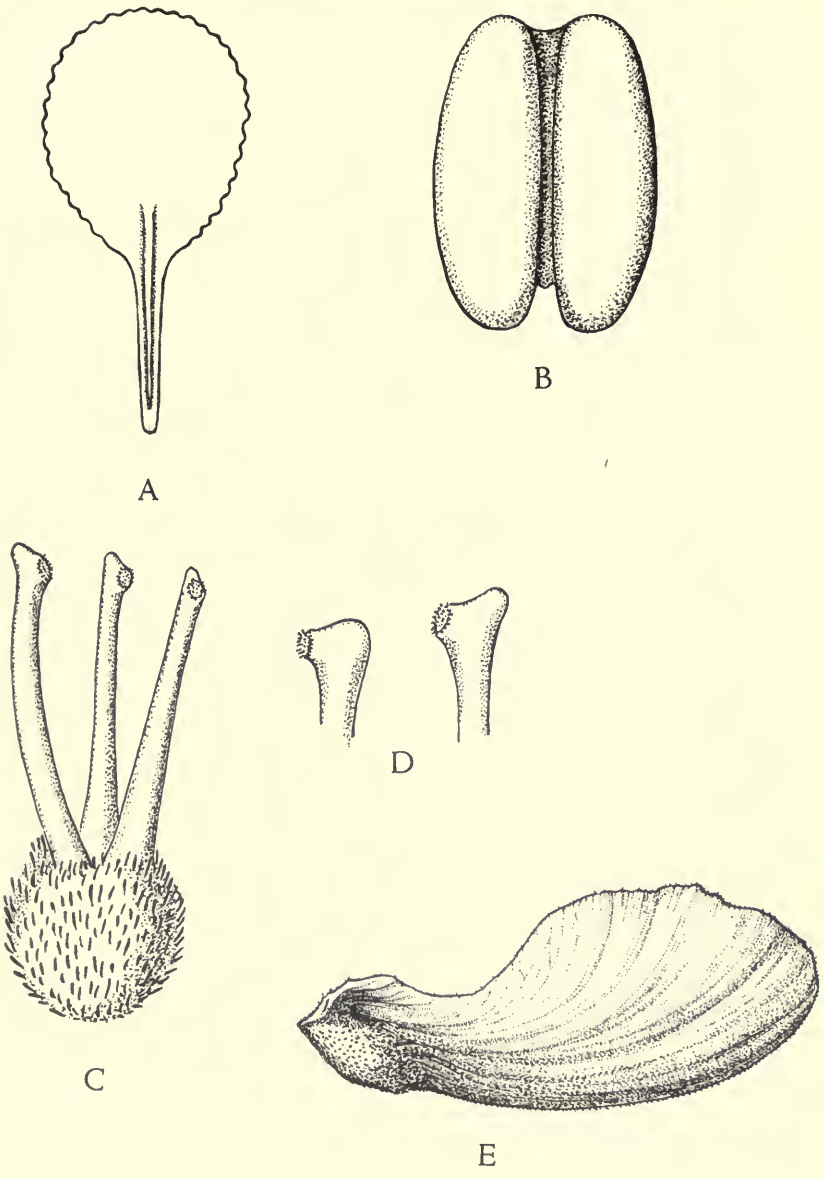

FIGURE 51

Heteropterys quetepensis

A, Petal (X 8); B, Anther (X 34); C, Ovary with styles (X 16); D, Stigmatose inner angle of two styles (highly magnified); E, Samara (X 23).

Upper Amazon. This new species differs in several important respects. The tips of the anther-cells are only shortly produced as conical-subulate appendages 0.2 mm. long, instead of 1.5 mm. long as in *G. macrocarpa*, the flowering and fruiting racemes are much shorter, more densely rufous-tomentose, the fruit is shorter and narrower, the fifth petal only undulate on the lower margins instead of glandular, and the leaves are more coriaceous, of a different shape, and more finely and densely reticulate on both sides.

Heteropterys quetepensis Steyermark, sp. nov.

Frutex 2.8-3.3-metralis, ramulis novellis pube densissima pallido-brunnea vel cinerea tomentosis, ramis teretibus glabratis, internodiis 1.5-9 cm. longis; foliis subcoriaceis vel chartaceo-subcoriaceis, subtus pallidioribus, late oblongis vel ovali-oblongis, apice rotundatis subretusis basi obtusis vel subcordatis, 6-15 cm. longis, 4-9 cm. latis, eglandulosis, nervis primariis utrinque 7-9, nervis praecipue subtus prominulis reticulatis, adultis supra per costam mediam minute adpresso-pilosis ceterum glabratis vel parce adpresso-pilosis, subtus dense pallido-strigillosis vel tomentosis; petiolis dense tomentosis incrassatis 3-10 mm. longis eglandulosis; stipulis inconspicuis; racemis brevibus 6-12-floris in paniculas rufo-velutinas bracteiferas terminales 2-4.5 cm. longas dispositis; pedunculis floriferis 2-9 mm. longis; pedicellis 2.5-4 mm. longis; bracteis ovatis vel elliptico-oblongis 3 mm. longis acutiusculis; bracteolis ovatis vel elliptico-oblongis 2 mm. longis obtusis vel obtusiusculis rufo-tomentosis; sepalis late triangulari-oblongis vel ovato-oblongis, apice revolutis et obtusis vel rotundatis, glandulas 8 oblongas discretas 2.5 mm. longas 1.5-1.8 mm. latas superantibus; petalis luteis, limbo obovoideo vel suborbiculari basi cuneato paulo crenulato 4.5 mm. longo 3.5-3.75 mm. lato, ungue 2.5-2.8 mm. longo; staminibus 10, antheris suborbicularibus 1.3 mm. longis 1 mm. latis glaberrimis, connectivo apice glaberrimo; filamentis 2.5-3.5 mm. longis glabris; gynoeceo sygomorphico, stylis subaequalibus 2.8-3 mm. longis, angulo verticis interno gynixiferis, dorso apicis rotundatis vel brevissime uncinatis; samaris dense velutinis rufis vel aurantiaco-brunneis, alis e nuce subhorizontalibus arcuatim vel geniculatim adscendentibus 2.5-3 cm. longis; nuce 6-8 mm. longa; alis supra basim constrictis inde oblique obovoideis, apice rotundatis basi in appendiculam rotundam humilem 1.5-2 mm. altam productis (Fig. 51).

Type in herb. Chi. Nat. Hist. Mus., collected on dry rocky (igneous-metamorphic) chaparral near Quetepe, between kilometers 18-20, east of Cumaná, state of Sucre, alt. 30 m., May 23, 1945, *Julian A. Steyermark 62880*, "shrub 8-10 feet tall; common; petals rich yellow; fruit reddish to orange-brown and salmon; leaves subcoriaceous-chartaceous, rich green above, buff paler green below."

It is strange that an undescribed species should be encountered in an area previously visited by Humboldt and Bonpland, especially as it is a fairly common plant in the region. It cannot be matched by any previously described species. It is a member of the Subgenus *Euheteropterys*, Sect. *Stenopterys*, as treated by Niedenzu in "Das

Pflanzenreich," and, apparently, is most closely related to *H. coriacea* Juss., which it resembles in the shape and pubescence of the leaves. It differs from that species in the short contracted inflorescence which is racemose at the apex, the connective of the anther glabrous at the apex and the limb of the petal cuneate and not cordate at base. From *H. laurifolia* (L.) Juss., and *H. anoptera* Juss., which it resembles in the short racemose inflorescences, it differs in the rounded apex of the leaves, the pubescence on the lower surface, the obtuse or obtusish apex of the bracteoles, and the limb of the petal narrowed at the base.

Hiraea tepuiensis Steyermark, sp. nov.

Liana, partibus novellis densissime rufo-sericeis, ramulis compressis, ramis teretibus demum glabratis; foliis subcoriaceis vel chartaceo-subcoriaceis ovato- vel oblongo-ellipticis, basi obtusis vel rotundatis, apice acutiusculis vel acuminatis, apiculatis, 4.5-8.5 cm. longis, 1.5-4 cm. latis, margine integerrimo eglanduloso, subtus novellis rufo-sericeis vel tomentellis, adultis parce rufo-tomentellis vel demum glabratis, supra plerumque glabratis, nervis primariis utroque 6-9, supra nervis secundariis paullo lineolatis, glandulis 2 subtus ad basim costae mediae vel ad apicem petioli; petiolis 6.5-10 mm. longis, eis et costa media subtus brunneo-sericeis; stipulis sub apice affixis linearibus ca. 1 mm. longis; dichasiis 2-5-umbelliferis axillaribus dispositis; bracteolis ovatis 1.5-2 mm. longis acutis rufo-sericeis; umbellis 2-4-floris; pedicellis 12-14 mm. longis rufo-sericeis; sepalis erectis apice non reflexis eglandulosis ovatis obtusis 3 mm. longis 1.75-2 mm. latis, extus rufo-sericeis intus glabris; petalorum limbo suborbiculari vel suborbiculari-subreniformi 3-4 mm. longo, 4-5 mm. lato, fimbriato, ungue 1.5 mm. longo; androeceo zygomorphico; filamentis 2-3 mm. longis; antheris suborbicularibus 1-1.2 mm. longis 1-1.2 mm. latis, loculis late oblongo-subreniformibus curvatis glaberrimis; gynaeceo zygomorphico, stylis curvatis glabris 2.3-2.5 mm. longis, ad angulum internum obliquo-gynixiferibus, apice plerumque pediformibus vel paullo uncinatis; ovario hirsutulo; samaris junioribus adpresso-pubescentibus.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. N.Y. Bot. Gard., collected on southwest slopes of Mt. Roraima, vicinity of Arabupu, state of Bolívar, alt. 1500 m., December 28, 1939, *Albert S. Pinkus 90*, "high climbing liana; petals yellow; anthers brown."

The following cotype specimens in herb. Chi. Nat. Hist. Mus., all from the state of Bolívar, are: Ptari-tepuí, southeast-facing slopes, alt. 1585-1600 m., November 10-11, 1944, *Steyermark 59986*, "woody vine in small trees, common; leaves chartaceous-subcoriaceous, dark green above, dull green below, pubescence on young stems, petioles, pedicels, and sepals dark brown" (young fruiting specimen); Ptari-tepuí, dense forest at base of cerro along Río Karuai, alt. 1220 m., November 27, 1944, *Steyermark 60636*, "liana; leaves subcoriaceous, deep green above, dull green below; flowers brown;" Ptari-tepui, rich woods bordering quebradas at base of southeast-facing slopes, alt. 1585-1600 m., November 10-11, 1944,

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Steyermark 60039, "leaves subcoriaceous, dark green above, dull green below; pedicels and petioles dull brown tomentose."

This species, common on the slopes of Ptari-tepuí and of Mount Roraima between elevations of 1500-1600 meters, is distinguished by the small subcoriaceous elliptic-ovate or oblong-elliptic blades with entire margins, at first rufous-sericeous, but finally glabrous, the finely lineolate upper leaf surfaces, the small glands of the stipules, the eglandular obtuse sepals, the zygomorphic androecium and gynoecium, hirsutulous ovary, pediform tip of one of the styles, and suborbicular anthers. The leaves are much smaller and thicker than in *H. fagifolia* (DC.) Juss.

Tetrapterys pusilla Steyermark, sp. nov.

Suffruticosa 0.5-metralis, partibus novellis glabris vel parce adpresso-puberulis, internodiis 1.5-4 cm. longis; foliis subcoriaceis subrevolutis oblanceolatis vel oblanceolato-obovatis, apice obtusis, apiculatis, basi cuneatis, 2.5-4.7 cm. longis 1-1.7 cm. latis, glabris, nervis primariis utroque 5-6, subtus fere non manifestis, supra non manifestis, costa media subtus prominente; petiolis glabris incrassatis supra canaliculatis 2-3 mm. longis; stipulis inconspicuis basi petioli affixis; racemis simplicibus axillaribus basi rhachidis nudis 2-2.5 cm. longis 2-8-floris glabris vel glabratis; pedunculis floriferis 1.2-5 cm. longis; pedicellis 6-9 mm. longis glabris; bracteis bracteolisque ovalibus vel oblongo-ovoideis obtusis 1.8-2 mm. longis 0.8-1 mm. latis, parce adpresso-puberulis vel glabratis; sepalis apice revolutis suborbicularibus vel late ovoideis, apice rotundatis, 10 glandulas crassas obovoideas 2 mm. longas 1.8 mm. latas superantibus, extus parte media parce adpresso-puberulis, marginibus ciliolatis, ceterum glabris, intus glabris; petalis luteis, limbo suborbiculari, apice rotundato, basi cuneato, 7.5 mm. longo 8 mm. lato, ungue 2-3.5 mm. longo; staminibus 10, omnibus fertilibus; antheris late oblongis 1.2-1.4 mm. longis 0.6-0.7 mm. latis glabris; filamentis glabris ca. 2 mm. longis; stylis directis plerumque subaequalibus 2.5-2.8 mm. longis glabris obtusis, apice subtruncatis vel oblique truncatis vel rotundatis; ovario glabro; samaris maturis non visis.

Type in herb. Chi. Nat. Hist. Mus., collected on sandy wet ground with *Stegolepis* and *Brocchinia,* Gran Sabana, between Mission of Santa Teresita de Kavanayén northwest to Río Karuai, on large mesa, state of Bolívar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark 59361,* "suffruticose 1½ feet tall; leaves subcoriaceous, erect, deep olive green above, pale green below, subrevolute; petals deep yellow."

This species is at once distinguished by the suffruticose dwarf habit, small oblanceolate glabrous leaves in which the midrib only is prominent, the lateral nerves mostly suppressed, the short, racemiform, axillary inflorescences of large flowers with conspicuously fimbriate petals. The petiolar stipules relate this plant to Subgenus *Mischolepis,* as treated by Niedenzu in Das Pflanzenreich. It apparently is related to *T. fimbripetala* Juss. of the Guianas, and to *T. oleifolia* (Benth.) Niedenzu of Mount Roraima. From the former

it may be easily separated by the habit, small leaves without conspicuous nervation, and smaller more orbicular bracteoles, while from the latter it may be easily distinguished, especially by the glabrous leaves, petioles, and young stems, larger petals, and obtuse to rounded bracteoles.

VOCHYSIACEAE

Qualea ferruginea Steyermark, sp. nov.

Arbor 10-35-metralis; ramis adscendentibus, ramulis juvenilibus fusco-tomentellis; internodiis 2-3 cm. longis; glandulis parvis orbicularibus concavis; petiolis 3-9 mm. longis minute ferrugineo-tomentellis; laminis erectis confertis coriaceis vel subcoriaceis, supra atroviridibus nitidis, obovatis vel obovato-oblongis vel elliptico-oblongis, apice late rotundatis vel obtusis, apiculatis vel subretusis, basi cuneatis vel subobtusis, 4-8 cm. longis 2-4 cm. latis, fere glabris, costa media subtus valde prominente utrinque ferrugineo-tomentellis excepto, marginibus paginae inferioris incrassatis glabris vel minute ferrugineo-puberulentibus, costis lateralibus creberrime gracillimis parallelis; inflorescentia terminali 4-6 cm. longa; pedicellis 4-8 mm. longis ferrugineo-tomentosis; alabastris elongato-conicis acutis 10-11 mm. longis; calycis laciniis obtuse carinatis, exterioribus ovatis acutis 3.5-4 mm. latis ferrugineo-tomentellis, interioribus (tertia et quinta) majoribus late ovatis acutis 4.5-5.5 mm. longis 3-4 mm. latis ferrugineo-tomentellis; quarta calcarata elliptico-oblonga obtusa 14 mm. longa ferrugineo-tomentella; calcare 3-4 mm. longo; petalo suborbiculari-ovoideo, apice rotundato apiculato, basi angustato, glabro, albido cum medio aurantiaco, salmoneo marginato, 27 mm. longo, ad 25 mm. lato; staminis filamento glabro 10.5 mm. longo; anthera 6.5 mm. longa dense unilateraliter barbata; stylo 17 mm. longo superne glabro dimidio inferiori piloso; ovario puberulo.

Type in herb. Chi. Nat. Hist. Mus., collected in Quebrada de Kavanayén, between Santa Teresita de Kavanayén and airport, state of Bolívar, alt. 1200-1220 m., December 11, 1944, *Julian A. Steyermark 60914*, "tree 50 feet tall; branches ascending; leaves erect, closely bunched, coriaceous to subcoriaceous, dark green above, pale green below with prominent yellow green midrib; petal white with orange center bordered on either side by salmon-orange or brick streaks; style pale green; filament pale greenish; anther buff; connective green; flowers fragrant."

Other collections, all from the state of Bolívar, Venezuela, are: lower portion of quebrada, wooded slopes of Quebrada O-paru-má, between Santa Teresita de Kavanayén and Río Pacairao (tributary of Río Mouak), alt. 1065-1220 m., November 20-21, 1944, *Steyermark 60438*, "tree 100 feet tall with trunk 3 feet in diameter; leaves coriaceous, deep green and shining above, yellow green below with prominent raised midrib which is dull olive green with brownish along margins;" rich woods bordering quebradas at base of southeast-facing slopes of Ptari-tepuí, alt. 1585-1600 m., November 10-11, 1944, *Steyermark 60028*, "tree 60-70 feet tall; leaves coriaceous-

chartaceous, dark green above, dull green below, midrib below slightly ferruginous; young stems and buds ferruginous;" and rich woods, vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and Sororopán-tepuí, alt. 1615 m., November 15-17, 1944, *Steyermark 60291*, "tree 80 feet tall; leaves coriaceous-chartaceous, deep green and shining above, yellow green or pale green below; petal white with golden in center; filament brick-salmon; spur salmon-brick; style pale green; flower fragrant."

Local names: "amu-rieu-wai-yek," "keu-pau-rik-orai-yek," and "copai-yek."

This species may be distinguished by the ferruginous tomentum of the rachis, pedicels, and on either side of the midrib of the lower leaf surface, where it manifests itself conspicuously along the sides of the midrib, by the small obtuse blades with prominent midrib on the lower surface, the densely barbate-pubescent anther, style pubescent in the lower half, and white and orange petal.

It is similar to *Q. glaberrima* Ducke, but that species has the style glabrous throughout, lacks the ferruginous tomentum of the midrib on the lower leaf surface, and has more pointed blades. It is also related to *Q. retusa* Spruce, from which it differs in having a well-developed mostly terminal inflorescence, larger stiffer blades, and ferruginous tomentum of the rachis and midrib of the lower leaf surface.

Vochysia rubiginosa Stafl.,[20] sp. nov. Sectio *Ciliantha* Stafl., subsectio *Ferrugineae* Warm.

Arbor mediocris. Ramuli et gemmae juveniles, stipulae, folia juvenilia subtus, rhachis, pedunculi et pedicelli rubiginoso-tomentelli. Ramuli juveniles sulcati angulati, angulo rotundato, adulti subteretes. Stipulae persistentes, subulatae, circa 0.05 cm. longae. Folia opposita. Petioli 0.6-0.9 cm. longi, basi incrassati. Lamina elliptica, circa 5-7 x 2.0-2.8 cm., apice acuminata, basi acuminata vel acuta, supra subnitida glabra costa media excepto, adulta subtus cano-brunneo-tomentella, margina plana. Nervi utrinque subprominentes, numerosi, sub angulo 70-80° a nervo medio patentes. Costa marginalis subundulata, 0.05 cm. a margine distans. Inflorescentia terminalis, densiflora, cylindrica, pedunculis 0.3-0.4 cm., pedicellis 0.6-0.8 cm. longis, cincinnis 1-floris. Alabastra recta vel subrecurva, circa 0.9-1.3 cm. longa. Calcar 0.5-0.7 cm. longum, subincurvum, sub angulo 0-30° a pedicello patens. Sepala minora deltoidea, acuta, 0.1 x 0.1 cm., sepalum quartum post anthesin falcato-recurvum. Petalum intermedium stamine paululum brevior, circa 0.8 x 0.2 cm., lanceolato-ovatum, acutum, extus ferrugineo- vel fulvo-villosum; lateralia fere duplo minora, apice villosa. Stamen 0.8-0.9 x 0.1-0.2 cm., antherae oblongae, margine loculorum villosae; filamentum gracile circa 0.3 cm. longum. Staminodia glabra lingulata, circa 0.1 cm. longa. Stylus cylindricus, gracilis, 0.7-0.8 cm. longus. Stigma terminale, planum, 0.03-0.08 cm. diam. Capsula ignota.

[20]By F. A. Stafleu

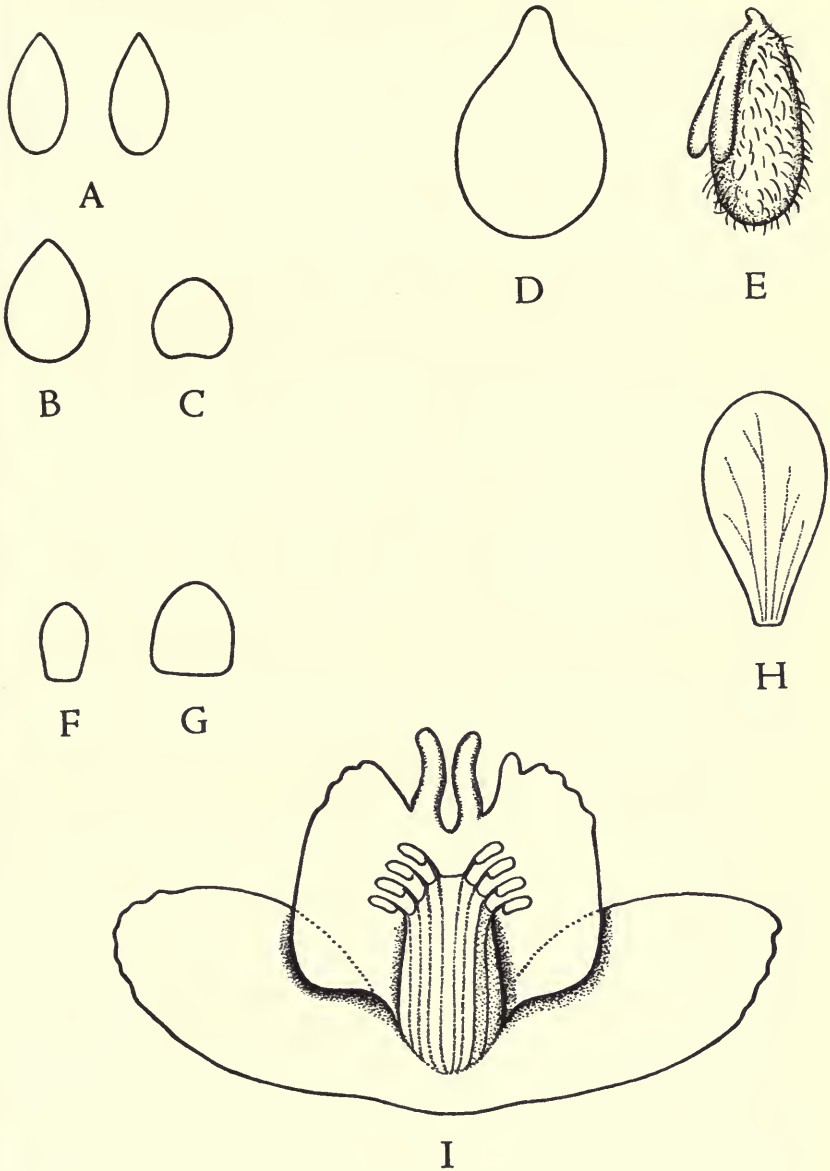


FIGURE 52

Polygala appressa var. kavanayen

A, Two outer sepals (X 18); B, Third outer sepal (X 18); C, Third outer sepal (X 10); D, Wing (X 16.5); E, Seed with aril (X 27); F, One of the two outer sepals (X 12); G, Third outer sepal (X 14); H, Wing (X 18); I, Opened corolla with stamens (X 35).

Type in herb. Chi. Nat. Hist. Mus., collected in scrubby woods, vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and Sororopán-tepuí, state of Bolivar, *Julian A. Steyermark 60265*, "tree 40 feet tall; corolla deep yellow or golden; pedicels fulvous-brown; style pale yellow; leaves coriaceous, dark green above, gray green on older leaves below, ferrugineous on younger leaves below."

Related to *V. javitensis* Stafl., but differing from it in nervation, apex of the leaves and shape and dimensions of the spur (Vide Stafleu in Med. Bot. Mus. Utr. 95, p. 509. Rec. Trav. Bot. Neerl. XLI, p. 509).

POLYGALACEAE

Polygala appressa Benth., var. **kavanayena** Steyermark, var. nov.

Sepala exteriora inaequalia, elliptico-oblonga vel anguste ovata, acutiuscula vel obtusiuscula, 1 mm. longa 0.4 mm. lata, superius ovoideum vel late ovatum vel suborbiculare obtusiusculum vel rotundatum 1.1-1.2 mm. longum, 0.8 mm. latum; alis obovatis, apice rotundatis, 2.1 mm. longis, 1.2-1.4 mm. latis; petalis superioribus obovoideis, apice rotundatis, 1.5 mm. longis, 1 mm. latis, crista brevi, lobis paucis formata, 2 lobis intimis linearibus; semine elliptico-oblongo hirsuto 1.3 mm. longo; arillo 0.9-1 mm. longo (Fig. 52).

Type in herb. Chi. Nat. Hist. Mus., collected on sandy wet meadow on large mesa, Gran Sabana, between Mission of Santa Teresita de Kavanayén northwest to Río Karuai, state of Bolívar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark 59359*, "flowers pale green with brick or dull rose at tip."

This differs from typical *P. appressa* Benth. principally in the longer aril, which covers 2/3–3/4 the length of the seed, whereas in typical *P. appressa* the aril is only 1/3 or less the length of the seed. Other minor differences are in the shape and dimensions of outer sepals and wings: in *P. appressa* var. *kavanayena* the wings are slightly wider, the upper outer sepal somewhat less rounded at the apex, and the other two outer sepals slightly more acutish or obtusish rather than distinctly rounded at the apex.

Polygala Blakeana Steyermark, sp. nov.

Herba annua, caule erecto apice ramoso plus minusve dense folioso 19 cm. alto supra dense glandulosa; foliis erecto-adscendentibus lineari-acicularibus alternis 4.5-9 mm. longis 1-1.5 mm. latis, supremis marginibus glandulosis; racemis terminalibus densifloris anguste conoideis 12-15 mm. longis 5-6 mm. latis, rhachidi dense glandulari-papillata; bracteis lanceolatis acuminatis 2 mm. longis 0.4 mm. latis caducis, ad margines remote glandulari-crenulatis; pedicellis 0.1-0.2 mm. longis; floribus 2.5-3 mm. longis albis; sepalo superiore late ovato apice obtuso vel rotundato 1.5 mm. longo 0.7-0.8 mm. lato; sepalis inferioribus ovatis acutiusculis vel obtusiusculis 1.4-1.5 mm. longis 0.6 mm. latis; alis oblongo-ellipticis obtusis 2.5 mm. longis 1.5 mm. latis quam corolla longioribus; corolla 2 mm. longa, petalis

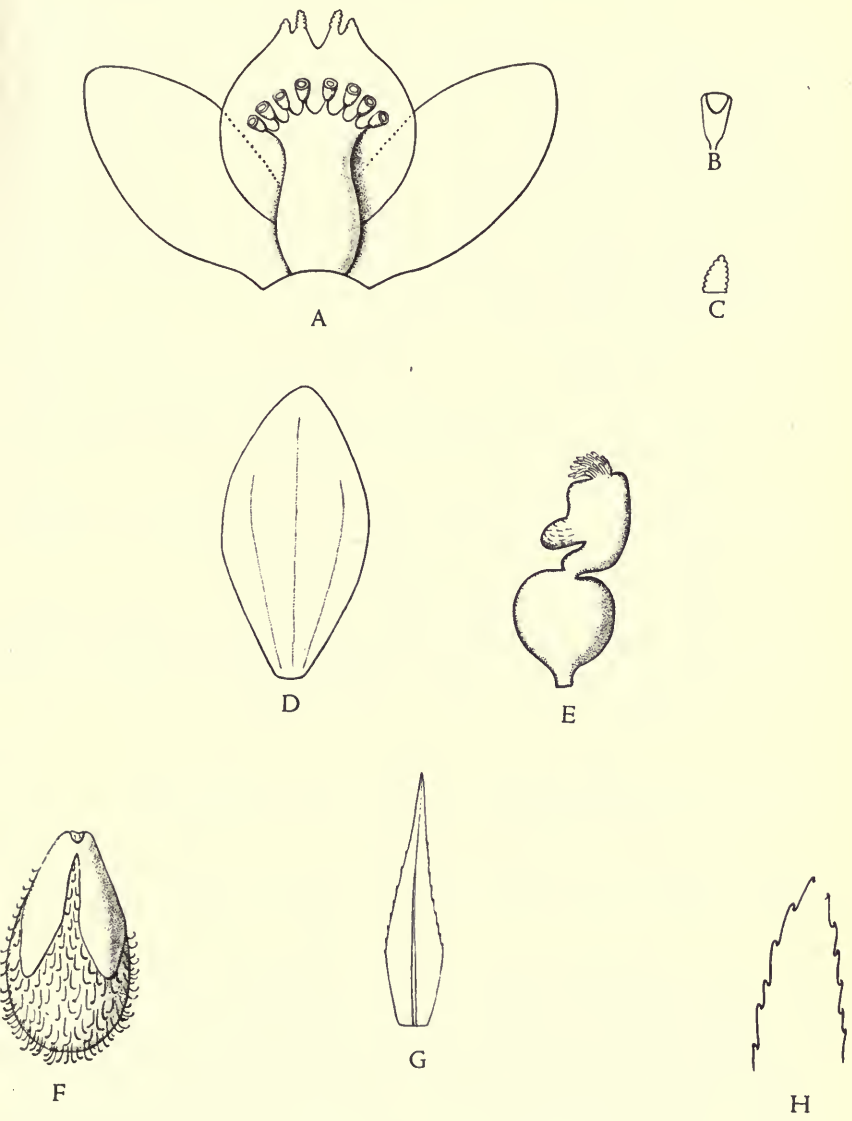


FIGURE 53

Polygala Blakeana

A, Opened corolla with stamens (X 14); B, Anther with portion of filament (X 16); C, Papillate surface of 4-lobed crest (highly magnified); D, Wing (X 14); G, Bract of inflorescence (X 19); H, margine of bract (more highly magnified).

superioribus elliptico-oblongis obtusis 1.5 mm. longis 1 mm. latis; carina 1.5 mm. longa suborbiculari, crista 4-fida, lobis papillatis, intimis linearibus quam lobis extimis longioribus; capsula suborbiculari 1.7 mm. longa 1.5 mm. lata glabra; seminibus ovoideis nigris 1 mm. longis, pilis brevibus subpatentibus glochidiatis vel apice incurvis albis praeditis; arillo 1.3-1.5 mm. longo, lobis 2 linearibus vel spatulato-oblongis appressis, 2/3–3/4 longitudinis seminis attingentibus (Fig. 53).

Type in herb. Chi. Nat. Hist. Mus., collected on Gran Sabana, between Kun and Uaduara-parú, in valley of Río Kukenán, south of Mount Roraima, state of Bolívar, alt. 1065-1200 m., October 1, 1944, *Julian A. Steyermark 59065*, "flowers white."

Because of the glochidiate or incurved apex of the hairs covering the arillate seed, this species is a member of the Subsect. *Glochidiatae* of Sect. *Orthopolygala* as treated by Chodat (or Ser. *Glochidiatae* of Subgenus *Orthopolygala* as treated by Blake), and probably most closely related to *P. subspicata* Hüber of northern Brazil.

It differs from *P. subspicata* in the much longer, acuminate bracts, larger wings and longer outer sepals, 4-lobed crest, glandular rachis, glandular upper part of stem and margins of upper leaves, and in the hairs on the seed shorter and more uncinate at tip.

The species is named in honor of Dr. S. F. Blake, Senior Botanist of the U.S.D.A. Plant Industry Station, whose work on *Polygala*, and, especially, whose revision of the Mexican, Central American, and West Indian species of the genus has shed much light on this interesting group of plants.

Polygala monticola H.B.K. Nov. Gen. & Sp. Pl. 5: 405. 1823.

Polygala mollis H.B.K. Nov. Gen. & Sp. Pl. 5: 405. 1823

Polygala monticola var. **bryzoides** (St. Hil.) Steyermark, comb. nov.

Polygala bryzoides St. Hil. Fl. Bras. Mer. 2: 44 *t. 88*. 1829.

Absence or presence of glandular cilia on the outer sepals and relative abundance and distribution of pubescence on the leaves are the chief criteria used by Chodat to separate *P. angustifolia* H.B.K., *P. mollis* H.B.K., and *P. monticola* H.B.K. into two groups. From the series of specimens examined, it does not seem possible to retain these three entities as specific categories. There is such variation in the amount of foliar pubescence and in relative abundance or lack of glandular-ciliation of the outer sepals as to suggest that these entities represent phases of a polymorphic species. Both *P. monticola* and *P. mollis* have the outer sepals ciliate, but not glandular. *Polygala monticola* H.B.K., having page priority, must be accepted as the correct name. *Polygala mollis* appears to be a more pubescent phase of *P. monticola*, while *P. bryzoides* St. Hil. (*P. angustifolia* H.B.K., not Gilib.) may be considered as representing only a variation with glandular ciliation of the outer sepals.

Polygala sanariapoana Steyermark, sp. nov.

Herba annua tenuis erecta glaberrima simplex vel parce ramosa 6-18 cm. alta; foliis plerumque alternis, inferioribus obovatis apice rotundatis paullo confertis, reliquis linearibus acicularibus remotis, glabris 2-5 mm. longis 0.3-2 mm. latis; racemis terminalibus late oblongis vel ovoideis subdensifloris 4-12 mm. longis 4-6 mm. latis, rhachidi papillari-verruculosa; bracteis ovatis acutis glandulari-ciliatis; pedicellis 0.8-0.9 mm. longis; floribus 2-3.5 mm. longis glabris; sepalo superiore eglandulari late ovali-ovoideo vel sub-orbiculari-ovoideo, apice rotundato 1.2 mm. longo 0.8 mm. lato; sepalis inferioribus eglandularibus elliptico-oblongis, apice obtusis, 1 mm. longis 0.4-0.5 mm. latis; alis elliptico-obovoideis obtusis 3 mm. longis 1.6-1.7 mm. latis quam corolla longioribus eglandularibus; corolla 2.5 mm. longa, petalis superioribus elliptico-oblongis acutiusculis vel obtusiusculis 1.5-1.7 mm. longis 0.6-0.7 mm. latis; carina multifida, crista plerumque 8-laciniata, laciniis subulato-linearibus 0.8-0.9 mm. longis; capsula elliptico-oblonga vel anguste ovoidea 2.3-2.5 mm. longa 1-1.2 mm. lata glabra eglandulari; seminibus longe conicis apice paullo constrictis atro-brunneis retrorsum sericeo-comosis estrophiolatis 3.6-3.7 mm. longis (coma inclusa) (Fig. 54).

Type in herb. Chi. Nat. Hist. Mus., collected in vicinity of Sanariapo, near Río Sanariapo, tributary of Orinoco river, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Julian A. Steyermark 59452*, "petals white;" also collected with same data, *Steyermark 58498*, "on rocks; flowers white."

This species, with its comose conical seed, obviously belongs to Subsect. *Trichospermae* of Sect. *Orthopolygala* as treated by Chodat (or Ser. *Trichospermae* of Subgenus *Orthopolygala* as treated by Blake). It shows affinity to *P. longicaulis* H.B.K. It is readily differentiated from that species by the eglandular, shorter, outer sepals which are obtuse or rounded at the apex, the obtuse instead of cuspidate apex of the wings, the larger seed, and lower obovate leaves rounded at the apex.

Polygala santanderensis Killip & Steyermark, sp. nov.

Herbacea 0.3-1.3-metralis, caule 1.75-2 mm. diam. basi simplice glabra superne parce ramosa, ramis elongatis angulatis; foliis plerumque omnibus 3-5-verticillatis quam internodia plerumque brevioribus, petiolis ad 2 mm. longis glabris vel parce puberulis, laminis lanceolatis vel elliptico-lanceolatis apice acute acuminatis basi acutis 1.5-5.5 cm. longis 3-9 mm. latis utrinque plerumque glabris subtus costa media prominente; racemis axillaribus vel plerumque terminalibus paucibus pedunculatis laxifloris 3-8 cm. longis, pedunculis erectis 4-7 cm. longis parce strigillosis; bracteis ovatis vel late lanceolatis cuspidato-acuminatis 1.5-3 mm. longis ca. 0.75 mm. latis; pedicellis 1-1.5 mm. longis glabris; floribus 4-5.5 mm. longis albidis vel purpureis; sepalis inferioribus subaequalibus ovatis obtusiusculis 1.8-2 mm. longis 1.1-1.2 mm. latis, marginibus supra medium parce ciliolatis, aliter glabris vel extus parce ciliolatis, extus glabris vel

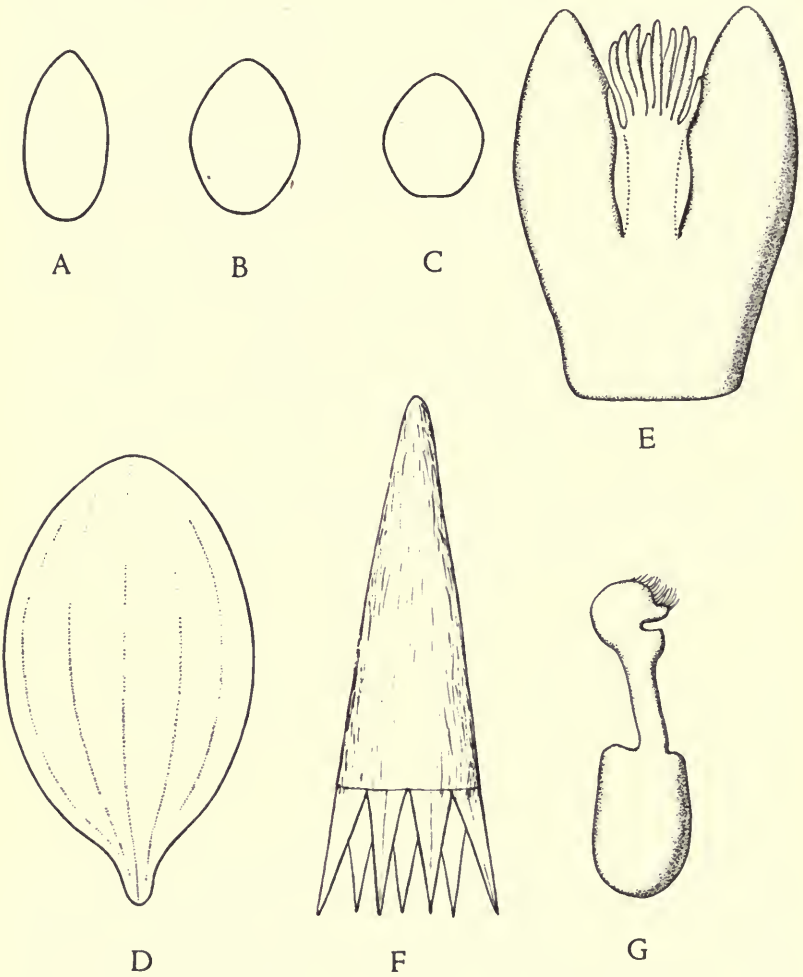
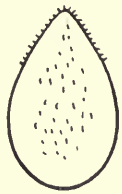


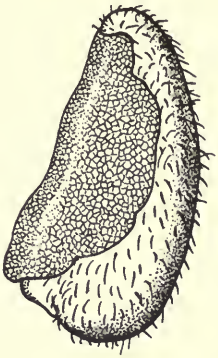
FIGURE 54

Polygala sanariapoana

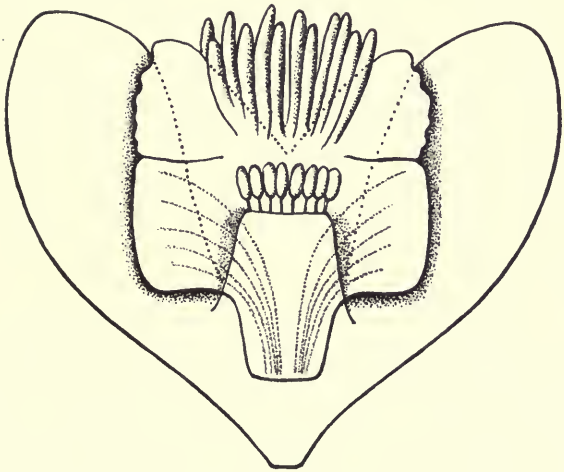
A, One of the two outer sepals (X 25); B, Third outer sepal (X 17); C, Third outer sepal (X 14); D, Wing (X 29); E, Corolla showing keel and lateral lobes (X 20); F, Seed (X 17.5); G, Pistil (highly magnified.



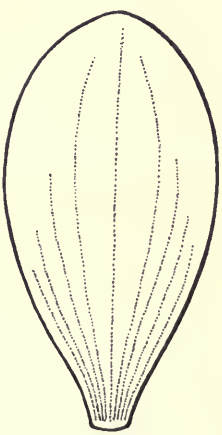
A



D



B



C

FIGURE 55

Polygala santanderensis

A, One of two outer sepals (X 12); B, Opened corolla with stamens (X 13.5); C, Wing (X 11); D, Seed with aril (X 13).

parce puberulis; sepalo superiore late ovatis obtuso 2.5 mm. longo 1.5 mm. lato alis obovatis, apice rotundatis 4.5-5 mm. longis 2.5-2.7 mm. latis glabris; corolla 4.5 mm. longa, petalis superioribus oblongo-obovatis apice rotundatis 3-3.5 mm. longis 1.5-1.75 mm. latis carina paullo longioribus per 1/2 cum tubo staminali connatis; carina multifida 2.25-2.5 mm. longa, crista incise lobata, laciniis subulato-linearibus; capsula pendula 3.5-3.8 mm. longa extus parce strigillosa; seminibus oblongis dense hirsutulis 3.5 mm. longis 1.5 mm. latis; arillo 2.7 mm. longo, lobis appressis 3/4–7/8 longitudinis seminis attingentibus (Fig. 55).

Type in U.S. Nat. Herb., isotype in herb. Chi. Nat. Hist. Mus., collected in dense forest, Río Suratá valley, above Suratá, Dept. Santander, Colombia, alt. 2000-2300 m., January 5–6, 1927, *Killip & Smith 16585*, "erect, slender herb 3-4 feet; petals rich purple; keel pinkish white."

Cotypes: COLOMBIA: Hoya de Samaria (Municipio de Toledo), Cordillera Oriental, Dept. Norte de Santander, alt. 2000-2100 m., October 29-30, 1941, *Cuatrecasas, Schultes & E. Smith 12760*, "herbácea; flor blanca."

VENEZUELA: between Villapaez and Betania, along Río Táchira, by Colombian-Venezuelan boundary, state of Táchira, alt. 2130-2285 m., July 17, 1944, *Steyermark 57432*, "herb 1-2 feet tall; calyx pale green; corolla white; base of outer petals pale greenish at base; leaves deep green above, pale green below: stems deep brown-lavender."

A member of the Ser. *Galioideae* of Sect. *Timutua*, Subgenus *Orthopolygala* as treated by Blake (or Ser. *Galioideae* of Subsect. *Verticillatae* of Sect. *Orthopolygala* as treated by Chodat), this species is related to *P. Ruiziana* Chod. of Peru and *P. crucianelloides* DC. of the West Indies, from both of which it differs in details of flowers or seeds.

EUPHORBIACEAE

Amanoa pubescens Steyermark, sp. nov.

Arbor 6-12-metralis; ramulis glabris; internodiis 1-2 mm. longis; foliis coriaceis vel subcoriaceis lanceolato-ellipticis vel ovatis, apice obtuse acuminatis basi obtusis vel acutis, 7.5-10 cm. longis 2-4.5 cm. latis glabris, costis secundariis utroque numerosis confertis, utrinque reticulato-areolatis; petiolis 10-14 mm. longis glabris; inflorescentia ramosa ad apicem ramulorum, ramis 4.5-11 cm. longis dense brunneo-hirtellis terminalibus vel axillaribus; floribus luteis (fide Williams) in glomerulis 5-7; floribus masculinis 2.5-3 mm. diametientibus: sepalis masculinis oblongo-obovatis, apice rotundatis 3.5 mm. longis, supra medium 2 mm. latis, marginibus cucullato-incurvatis scariosis; petalis squamelliformibus 1-1.5 mm. longis; staminibus 5, ovarii rudimento ad medium adnatis, antheris late oblongis 1 mm. longis, filamentis 0.5 mm. longis; ovarii rudimento discoideo apice 3-angulato; floribus foemineis non visis; capsula immatura subglobosa 11-12 mm. alta 13-14 mm. diam.; pedicellis fructiferis 2-3 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected en las orillas del Caño Pimichin, sobre todo en las partes que se aniegan periodicamente, Río Guainía, Territorio Federal Amazonas, alt. 128 m., February 20, 1942, *Llewelyn Williams 14439*, "arbol pequeño hasta de 8 m. de alt., de pocas ramas delgadas; el tronco redondo, 12 cm. de diam., arcuada, sobre saliente al río, sin ramas hasta los 3 m., el fruto es morenisco en su madurez; la corteza color castaño y el liber rosado a colorado; la albura de color amarillo pálido y el duramen rosado fuerte; se dice que el fruto es muy buscado por las aves palometas y los peces (morocoto) y arenca."

Other collections, all from Territorio Federal Amazonas, are: en las margenes arboreadas, periódicamente anegadas, Caño San Miguel, Río Guainía, alt. 127 m., March 24, 1942, *Llewelyn Williams 14859*, "arbol de 10 a 12 m., con ramas alargadas y poco arcuadas y aún pendientes; el tronco 20 cm. de diam.; la corteza castaño claro a obscuro, y el liber colorado a purpureo; la albura es castaño claro y el duramen rosado fuerte a rojizo;" en la márgen del Río Témi, alt. 200 m., January 21, 1942, *Llewelyn Williams 13862*, "arbol torcido, 6 m. de alt.; corona pequeña, abierta; tronco 15 cm. de diam., inclinado; duramen distinto, de color obscuro y la albura de color claro; corteza morenizca; fls. pequeñas, amarillentas, en espigas;" en la margen arenosa del Río Témi. alt. 280 m., January 21, 1942, *Llewelyn Williams 13866*, "arbol de 6 a 8 m., corona esparcida."

Local name: "reventillo."

This species differs from all others in the densely hirtellous floral branches. It is also distinguished by the close numerous lateral nerves which are finely reticulate or areolate on both surfaces, and by the acuminate or long-pointed apices of the blades.

Some of the collections cited above were distributed as *A. cupatensis* Hüber, a species which differs from the present one in its glabrous floral branches, black-punctate lower leaf surfaces, and rounded or retuse apices of the leaf-blade.

Bernardia venezuelana Steyermark, sp. nov.

Frutex ad 3 m. altus; ramulis dioicis, antrorsum strigillosis, indumento e pilis simplicibus formato; foliis subcoriaceis ovato- vel lanceolato-ellipticis, apice plerumque acutis vel subito subacuminatis, basi acutis, 3.5-10 cm. longis 1.5-4 cm. latis obtuse serrulatis, serraturis utrinque 20-24, penninerviis, costis secundariis utroque 7-9 subtus prominentibus supra sulcatis, rugosis, praesertim nervis scabridulis; petiolis 3.5-7 mm. longis strigillosis; stipulis triangulari-subulatis 3-3.5 mm. longis strigillosis; spicis foemineis non visis; spicis masculinis axillaribus subsessilibus vel breviter pedunculatis bracteigeris 11-23 mm. longis 2-3 mm. latis; rhachidi strigillosa; bracteis suborbiculari-ovatis acutis 3.5 mm. longis 4.5 mm. latis, ca. 6-floris; sepalis masculinis late ovatis acutis 1.5 mm. longis 1.2 mm. latis, extus parce pilosis; disci glandulis parvis; staminibus 8.

Type in herb. Chi. Nat. Hist. Mus., collected on exposed ridge top of sotabosque, Cordillera del Avila, between Los Venados and Pico Oriental, Distrito Federal, February 27-28, 1944, *Julian A. Steyermark 55603*, "shrub 10 feet tall; leaves rugose, subcoriaceous, deep green above, pale green below."

Other collections, all from Venezuela, are: rich woods between La Azulita and La Carbonera, state of Mérida, alt. 1280-2378 m., April 24, 1944, *Steyermark 56055*, "shrub 10 feet tall; leaves and inflorescence dull olive green; leaves subcoriaceous;" en matorrales en el camino entre Boca del Tigre y El Avila, Distrito Federal, alt. 1900-2000 m., *Llewelyn Williams 10906*, "arbusto delgado, hasta de 2.3 m. de alta."

This species is characterized by the relatively short staminate spikes, the antrorsely strigillose simple pubescence, and scabrid upper and lower surfaces of the leaves. It is related to *B. corensis* (Jacq.) Müll. Arg., from which it is distinguished by the more numerous, finer serrations of the scabridulous leaves, the more prominent and more numerous raised nerves on the lower leaf surface with more conspicuous reticulation, and the densely strigillose pubescence throughout.

Chaetocarpus Williamsii Steyermark, sp. nov.

Arbor 16-metralis; ramulis glabris; internodiis 0.7-2 cm. longis; foliis coriaceis elliptico- vel ovato-oblongis, apice subobtusis, basi rotundatis vel obtusis, 8.5-12.5 cm. longis 3.5-6 cm. latis glabris, costis secundariis utroque 4-5 anastomosantibus subtus prominulis; petiolis crassis 7-10 mm. longis 2-3 mm. latis; capsulae valvis 15-17 mm. longis 9-10 mm. latis lignosis tuberculatis, tuberculis 2-2.5 mm. longis basi 1.5-2.5 mm. latis, costis numerosis prominentibus, apice pilo brevi rigido horizontali vel geniculato caduco instructis; seminibus nigris nitidis compressis 5.5-6 mm. longis 5 mm. latis; caruncula stramineo-aurantiaca (Fig. 56).

Type in herb. Chi. Nat. Hist. Mus., collected cerca de la margen arboreada en la Isla al frente de Maroa, Río Guainía, Territorio Federal Amazonas, alt. 127 m., February 12, 1942, *Llewelyn Williams 14312*, "arbor de 16 m., con copa frondosa; tronco 60 cm. de diámetro, redondo, erecto, sin ramas por los 7 m.; corteza morenisca, levemente escamosa, algo delgada; la albura color claro y el duramen más obscuro, variando entre marrón claro y obscuro; fruto globoso, espinoso, deñiscente, usualmente de 3 semillas, las cuales de color negro lustroso envueltos en un aril color bermellon."

This species is distinguished from all others in the genus by the much larger fruit and seeds, and by the finely costate surfaces of the tubercles on the fruit. The larger fruit with distinct ridges on the longer tubercles, together with the leaf-blades obtuse at base distinguishes this species from *C. Pearcei* Rusby. The large tubercles clearly differentiates the species from *C. stipularis* Gleason and from *C. Schomburgkianus* (O. Ktze.) Pax & Hoffm. of Venezuela and the Guianas.

FIGURE 56

Chaetocarpus Williamsii

A, Habit of leafy branch (X 1); B, Seed (X 4); C, Valve of capsule from within (X 3); D, Valve of capsule from without (X 3).

Conceveibastrum ptarianum Steyermark, sp. nov.

Arbor 13-metralis; ramulis juvenilibus angulosis dense molliter olivaceo-brunneo-tomentosis; petiolis teretibus 11-15 cm. longis dense molliter olivaceo-brunneo-tomentosis; laminis subcoriaceis vel coriaceis, subtus pallidioribus griseo-viridibus, late ovatis, apice subito breviter acuminatis vel obtusiusculis, basi late cordatis, 22-30 cm. longis 15-21 cm. latis, remote atque minute denticulatis, basi septemnerviis, ceterum penninerviis, supra parce stellato-puberulis atque praesertim secus nervos pilis simplicibus dense hirtellis, subtus molliter pubescentibus pilis simplicibus; costis cum venis transversis parallelis subtus prominulis, costis secundariis utroque 5; stipellis inconspicuis impressis suborbicularibus; stipulis late ovatis acuminatis 1.8-2.3 cm. longis ca. 10 mm. latis sericeo-pubescentibus.

Type in herb. Chi. Nat. Hist. Mus., collected on steep, wooded slopes just below dry ridge and shrubby growth, southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 60021,* "tree 40 feet tall, one of common ones; leaves subcoriaceous to coriaceous, rich green above, paler gray green below; petioles and stems olive green."

Local name: "anonti-wa-yek."

Although the type specimen is sterile, there is no doubt as to the generic status of the plant. From the only other described species of the genus, *C. Martianum* (Baill.) Pax & Hoffm., this species is at once recognized by the more numerous hairs, and longer, softer pubescence of the lower leaf-surface, the softly pubescent nerves and veins, the softly pubescent petioles and stems, the densely sericeous-pubescent stipules, and by the stipellae at the base of the upper surface of the leaf-blade, which in *C. ptarianum* are only circular depressions, whereas in *C. Martianum* they are elongated and much more conspicuous.

Croizatia Steyermark, gen. nov.

Arbores. Folia alterna penninervia integra petiolata subsessilia basin versus sensim angustata. Flores dioeci? Masculi ignoti. Flores foeminei e gemmis axillaribus prodeuntes: sepala 5 magna. Ovarium 3-loculare. Ovula in loculis gemina. Capsula dura majuscula in coccos bivalves a columella persistente superne prominente alata basi pubescente dilatata supra receptaculum sessile dehiscens. Semina ecarunculata.

Type species *Croizatia neotropica* Steyermark.

This remarkable plant was at first believed to be a new species of *Adelia,* which genus it closely resembles superficially. But, as Dr. Croizat notes (in letter) after having examined this material, the two scars left by the ovules upon each of the three sides of the columella would place the genus in the *Phyllanthoideae* (the two scars indicating the place of attachment of two ovules in a cell), rather than in *Adelia,* in which there is only one ovule in each cell, the scar left by

the ovule on the columella being only one, thus placing the genus *Adelia* in an entirely different tribe. This genus is named in honor of Dr. Leon Croizat, who called my attention to the relationships of this plant with *Actephila*.

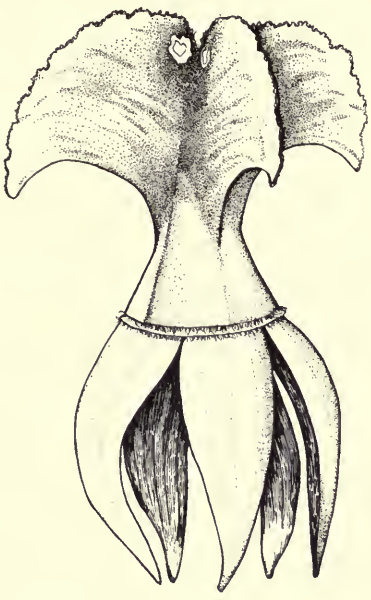
Indeed, this new genus so closely resembles *Actephila* that it is separated with some difficulty from that genus of the Old World (East Indies, Africa, Asia, and the Pacific Islands). From *Actephila* it is distinguished by the following characters: 1. the much larger columella of the fruit with more prominent wings and extensions at the summit; 2. the larger pistillate calyx; 3. the subsessile leaf with gradually attenuate blade instead of the suddenly petiolate blade of *Actephila;* 4. the broad disk; and 5. the broad pubescent lower half of the columella placed directly in contact with the receptacle and setting directly on the disk. In *Actephila,* on the other hand, the lower half of the columella, which is glabrous, is separated from the base of the receptacle and from the disk by a constriction (Fig. 57, f), the disk is narrow and but slightly developed, and the lower half of its columella is much narrower, smaller, and separated from the upper part of the columella by a prominent neck. In some species of *Actephila* this constriction is less marked than in others, but it is always present and the disk is narrow and inconspicuous. In *Actephila* the base of the columella becomes broadened into a somewhat lobate portion separated by a greater or lesser constriction above the disk and receptacle, whereas in *Croizatia* the base of the columella is not constricted and comes directly into contact with the disk and receptacle.

The combination of the characters given above, combined with the geographic isolation between the two genera, points to the recognition of a generic split existing between two closely related generic stocks of Africa and South America. The split between these two genera became intensified after these continents had been separated, a cleavage which happened so long ago (probably pre-Cretaceous), as to indicate the apparent antiquity of the generic stock from which the two genera were derived.

Croizatia neotropica Steyermark, sp. nov.

Arbor 7-10-metralis; petiolis incrassatis 6-8 mm. longis 3-3.5 mm. latis; laminis subcoriaceis supra atroviridibus nitidis oblongo-ellipticis vel elliptico-obovatis, apice acutis, ad basim graduatim attenuatis, subsessilibus 15-23 cm. longis 5-8 cm. latis glabris penninerviis, nervis secundariis utroque 12-15 arcuato-adscendentibus subtus paullo prominentibus supra subsulcatis, e margine 0.8-1.5 cm. anastomosantibus; floribus foemineis e gemmis axillaribus vel terminalibus 1-2, pedicellis sub fructu 3.5-4.5 cm. longis 1.5-2 mm. latis, apice dilatatis, glabris; sepalis foemineis subcoriaceis lanceolatis vel lineari-lanceolatis acutis vel acutiusculis 8.5-9 mm. longis 2-4 mm. latis glabratis, marginibus ciliatis excepto; capsula 17 mm. lata triloba tenuiter strigillosa vel appresso-pubescenti, prominente reticulato-nervata, areolis elongatis vel angustatis; seminibus brunneis 10.5-12 mm. longis 6.5-7 mm. diam. acriter trigonis, facibus

FIGURE 57–A
Croizatia neotropica
Habit of fruiting branch.



B

E

C

D

F

FIGURE 57 B–E, F

Croizatia neotropica. B, Columella in fruit with persistent calyx and ovule scars (X 4); C, Disk, from above (X 2.5); D, Disk, from side (X 4); E, Seed (X 2). F, *Actephila dispersa* (Elmer 12621 showing columella in fruit with persistent calyx and ovule scars (X 4.5).

intimis planis, parte hilari acriter carinata; columella 1 cm. longa, basi hispidula, apice in tres alas basi 4.5 mm. latas apice 13-14 mm. latas prominentes dilatata (Fig. 57, a–e).

Type in herb. Chi. Nat. Hist. Mus., collected in Quebrada Seca, between Fila Grande of Cerro Negro and Río Maravilla above Cerro Vaquero, northeast of Los Chorros and El Cielo, east of Bergantín, state of Anzoátegui, alt. 1000-1100 m., March 18, 1945, *Julian A. Steyermark 61523*, "small tree 20-30 feet tall; abundant and dominant substory in all the forest; leaves subcoriaceous, dark green and shining above, pale green below."

Local name: "cusparo."

It is interesting that a tree which is so abundant in the forest as to be a dominant part of the substory should have remained unknown generically until the present time.

Croton chamanus Steyermark, sp. nov.

Planta fruticosa 0.6-0.7 m. alta; caulibus dense stellato-pubescentibus; stipulis mox deciduis; petiolis 12-15 mm. longis dense stellato-pubescentibus; laminis ovali-obovatis vel obovoideis apice rotundatis vel obtusis, basi eglandulosis subcordatis vel rotundatis, 3.6-4.2 cm. longis 2.3-3 cm. latis, crenato-denticulatis, utrinque dense stellato-pubescentibus, penninerviis, costis secundariis utroque 6; racemis terminalibus plerumque densifloris 3.5 cm. longis, floribus foemineis bene evolutis, parte foeminea 2.7 mm. longa, rhachide dense stellato-pubescenti; floribus foemineis; calyce 5-partito, laciniis paullo inaequalibus lanceolatis acutis 1.6-1.8 mm. longis 0.5-0.75 mm. latis utrinque stellato-pubescentibus basi aureo-glandulosis manifestis; petalis obsoletis; stylis bipartitis fere omnino liberis, laciniis integris; ovario dense hispidulo; floribus masculis; receptaculo masculo vestito intus uno latere aureo-biglandulari; calyce 6-partito paullo inaequali, laciniis elliptico-ovatis vel oblongo-ellipticis acutis 2.5 mm. longis 1-1.5 mm. latis; petalis 6 oblongis vel ellipticis subacutis 2.5 mm. longis 1.5 mm. latis; staminibus 16; filamentis glabris 1.5 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on dry slopes of canyon bordering Río Chama, above Los Gonzalez, state of Mérida, alt. 1220-1820 m., May 2, 1944, *Julian A. Steyermark 56232*, "shrubby, 2 feet tall; leaves dull green above, gray green below."

In appearance this species somewhat resembles *C. pycnanthus* Benth. of Ecuador, but, among other differences, that has glands at the base of the blade.

Croton Croizatii Steyermark, sp. nov.

Arbor 8-metralis, ramulis junioribus cinereo-castaneo-lapidotis; petiolis 1.5-4.8 cm. longis cinereo-castaneo-lepidotis; laminis ovatis, apice subito acuminatis, basi subcordatis vel rotundatis, supra atroviridibus minute strumosis reticulato-nervatis, subtus dense stramineo-albido-lepidotis, 6-17.5 cm. longis 2.5-8 cm. latis, subtus glandulis patelliformibus posticis 2, costis secundariis utroque 13-14

paullo adscendentibus subtus prominentibus, supra costa media prominenti stramineo-brunneo-pubescenti; racemis terminalibus 12-15 mm. longis, stramineo-cinereo-lepidotis; floribus foemineis ignotis; floribus masculinis cinereo-albidis; receptaculo piloso; calycis laciniis 5 late ovatis apice obtusis vel rotundatis 4.5 mm. longis 2.75 mm. latis, extus cinereo-albido-lepidotis; petalis ovatis obtusis 3 mm. longis 1.5 mm. latis, extus adpresso-pilosis, marginibus pilis patentibus dense ciliatis; staminibus 15-17; filamentis 1.5-1.7 mm. longis infra medium villosis.

Type in herb. Chi. Nat. Hist. Mus., collected near Hacienda Agua Blanca above La Azulita and Río Capaz, state of Mérida, alt. 975 m., April 26, 1944, *Julian A. Steyermark 56124*, "tree 25 feet tall; leaves deep green above, with buff brown midnerve above, buff white below, nerves raised; petioles gray brown; flowers buff green."

This species is most closely related to *C. badiocalyx* Croizat of Colombia, from which it may be distinguished by the staminate calyx which is grayish-white rather than chestnut-colored at full anthesis, only the youngest buds in *C. Croizatii* showing any chestnut color, by the larger leaves more prominently and narrowly acuminate, longer petioles, chestnut-colored pubescence of stems and petioles, and by the arboreal habit.

Croton deserticolus Steyermark, sp. nov.

Arbor 6.5-8-metralis; ramulis junioribus gracilibus teretibus stellato-pilosulis; stipulis subulatis 2-2.5 mm. longis caducis; petiolis 3-8 mm. longis stellato-pilosis; laminis ovalibus vel ovatis apice obtusis vel rotundatis saepe minute apiculatis, basi eglandulosis rotundatis vel obtusis, 1.7-3 cm. longis 0.8-2.1 cm. latis integris, utrinque dense stellato-pubescentibus, penninerviis, costis secundariis utroque 6-7 supra fere obsoletis subtus subprominulis; racemis terminalibus laxifloris 5.5-6 cm. longis, rhachi dense stellato-pilosa; floribus foemineis; calyce 5-fido, laciniis aequalibus linearioblongis vel oblongo-oblanceolatis obtusis vel subacutis 2.5-3 mm. longis 1-1.5 mm. latis, extus atque intus parte superiore dense stellato-pilosis; stylis bis dichotome divisis; ovario stellato-vestito; floribus masculinis; receptaculo dense villoso; calycis laciniis ovatis acutis 2-2.5 mm. longis 1.2 mm. latis, extus dense stellato-pilosis; staminibus 13; filamentis 2-2.5 mm. longis dense villosis.

Type in herb. Chi. Nat. Hist. Mus., collected in desert between Carora and Barquisimeto, state of Lara, alt. 500 m., May 28, 1944, *Julian A. Steyermark 56821*, "small tree 20-25 feet tall; leaves dull green above, pale gray green below; flowers creamy white."

Croton kavanayensis Steyermark, sp. nov.

Arbor 10-metralis; ramulis juvenilibus pilis ferrugineo-fulvis dense stellatis instructis; stipulis subulatis rigidis 8-11 mm. longis dense stellato-pubescentibus; petiolis 2.5-5 cm. longis pilis ferrugineo-fulvis dense stellatis instructis; laminis elliptico-ovatis vel elliptico-oblongis, apice subito acuminatis, basi rotundatis vel obtusis, supra atroviridibus nitidis glabris praeter costam mediam pubescentem,

subtus cinereo-viridibus dense molliter stellato-tomentosis, 11-18 cm. longis 5.5-9 cm. latis, subtus glandulis patelliformibus posticis 2, costis secundariis utroque 20-22 fere angulo recto patentibus; floribus ignotis.

Type in herb. Chi. Nat. Hist. Mus., collected on wooded slopes of Quebrada O-paru-ma', between Santa Teresita de Kavanayén and Río Pacairao (tributary of Río Mouak), state of Bolívar, alt. 1065-1220 m., November 20-21, 1944, *Julian A. Steyermark 60386*, "tree 30 feet tall; leaves firmly membranaceous, dark green and shining above, gray green below; petioles and stems ferruginous-fulvous."

This species, although sterile, is a well-marked one, related to *C. matourensis* M. Arg. It is distinguished from that species by the soft ferruginous-fulvous stellate pubescence of the stems and petioles, and by the soft gray-green stellate tomentum of the lower surface of the leaf-blade.

The trunk of this species is made by the Taurepan Indians of this region into canoes.

Croton larensis Steyermark, sp. nov.

Frutex 5-metralis; ramulis dichotome ramosis juvenilibus teretibus 1.5-2 mm. diam. fulvo-stellato-pubescentibus; stipulis subulatis 3.5 mm. longis stellato-pubescentibus mox deciduis; petiolis 5-9 mm. longis dense stellato-pubescentibus; laminis ovato-oblongis vel elliptico-oblongis obtusis vel obtusiusculis, basi obtusis vel subacutis, 2.8-4.2 cm. longis 1.5-2.3 cm. latis, glandulis parvis stipitatis 2-4, crenatis, supra pallido cinereo-viridibus aspero-stellato-puberulis, subtus pallido-viridibus densiusculo-stellato-pubescentibus, penninerviis, costis secundariis utroque 5-7 adscendentibus; racemis terminalibus paullo densifloris 2.5-4.5 cm. longis; bracteis subulatis; floribus foemineis; pedicellis 1-2.5 mm. longis; calyce 5-partito, laciniis paullo inaequalibus oblongis vel ovato-oblongis obtusis 2.5-3 mm. longis 1-1.5 mm. latis, extus dense stellato-hispidulis; stylis semel fere ad basin divisis, laciniis integris; ovario stellato-pubescente; floribus masculinis; receptaculo masculino villoso; calycis laciniis 5 elliptico-ovatis subacutis 2.5 mm. longis 1.5 mm. latis, extus dense stellato-hirsutis; petalis spatulato-obovatis apice rotundatis 2 mm. longis 1.2 mm. latis intus villosis; staminibus 11; filamentis glabris; capsulis ca. 4 mm. longis extus stellato-tomentosis; seminibus laevibus nitidis lavendulo-brunneis 3 mm. longis 2 mm. latis; carunculo stramineo-brunneo.

Type in herb. Chi. Nat. Hist. Mus., collected in dry chaparral between Trujillo-Lara boundary and Carora, state of Lara, alt. 305 m., May 28, 1944, *Julian A. Steyermark 56806*, "shrub 15 feet tall; leaves pale gray green above, pale green below."

This species is apparently a member of the section *Decarinium* M. Arg. and most closely related to *C. subincanus* M. Arg., but differs among other characters in its smaller stalked 2-4 glands at the base of the leaf blade, the non-bullate leaf-blades, and shrubby habit.

Croton roraimensis Croizat, var. **subintegrus** Steyermark, var. nov.

A typo differt marginibus foliorum subintegris vel paullo subcrenatis, laminis adultis apice obtusis.

Type in herb. Chi. Nat. Hist. Mus., collected along base of east-facing high sandstone bluffs, Ptari-tepuí, state of Bolívar, alt. 2410-2450 m., November 7, 1944, *Julian A. Steyermark 59925*, "calyx rich green."

Croton sucrensis Steyermark, sp. nov.

Frutex 1.8-2.8-metralis; ramulis juvenilibus pilis stellatis albido-fulvis tomentoso-vestitis, vetustioribus glabris; stipulis subulatis 5-7 mm. longis stellato-pubescentibus; petiolis 5-15 mm. longis pilis stellatis albido-fulvis tomentoso-vestitis; laminis oblongo-lanceolatis vel ovato-oblongis acutis vel acuminatis, basi obtusis 2.5-3.7 cm. longis 1-1.6 cm. latis, basi eglandulosis, integris, supra cinereo-viridibus pilis depresso-stellatis minutis dense tomentello-vestitis, subtus albido-cinereis pilis stellatis dense tomentoso-vestitis, penninerviis, costis secundariis utroque 10-13 subtus prominentibus adscendentibus subrectis; racemis terminalibus inter flores foemineos et masculos haud interrupto-nudis subdensifloris numerosis 3.5-7 cm. longis; bracteis subulatis 4-6 mm. longis; rhachi pilis stellatis albido-cinereis tomentoso-vestita; floribus foemineis: pedicellis 1.5-2 mm. longis; calyce 5-partito, laciniis ovatis acutis 3.5-4 mm. longis 2.5 mm. latis dense stellato-pubescentibus; stylis bis et ultra dichotome divisis, laciniis profunde bipartitis; ovario stellato-pubescente; floribus masculinis: pedicellis 3-6 mm. longis; receptaculo masculino piloso; calycis laciniis 5 aequalibus ovatis acutis 2.5-2.8 mm. longis 1.5 mm. latis, pilis stellatis viridi-albidis dense tomentoso-vestitis; staminibus 16; filamentis 3 mm. longis a basi usque ad apicem hirtellis; capsulis 6 mm. longis extus stellato-tomentosis; seminibus (immaturis) laevibus brunneis.

Type in herb. Chi. Nat. Hist. Mus., collected on dry rocky (igneous-metamorphic) chaparral near Quetepe, between kilometers 18-20, east of Cumaná, state of Sucre, alt. 30 m., May 23, 1945, *Julian A. Steyermark 62875*, "shrub 5-8 feet tall; leaves scented minty, membranaceous, dull green above, buff green below; flowers greenish white."

This species is related to *C. umbratilis* H.B.K., but differs in its much smaller leaves, denser buff-gray pubescence of the lower leaf surface, denser gray green pubescence of the upper leaf surface, in the smaller number of lateral nerves of the leaf blades, and in the larger number of stamens of the staminate flowers.

Croton turumiquirensis Steyermark, sp. nov.

Arbor 13-16-metralis; ramulis junioribus teretibus pilis longe stellatis dense brunneo-cinereo-hirsutis; stipulis lanceolatis 6-7 mm. longis 6.5 mm. latis; petiolis 5-15 cm. longis pilis longe stellatis dense brunneo-cinereo-hirsutis; laminis membranaceis late triangulari-ovatis vel late ovatis acuminatis, basi cordatis vel subtruncatis, 11-21 cm. longis 6-16 cm. latis, basi glanduliferis, glandulis 2

stipitatis 4-5 mm. longis clavato-cylindricis apice glabris subbilobatis subreniformibus ceterum stellato-tomentellis, inaequaliter eroso-denticulatis, supra atroviridibus pilis simplicibus bullatis et stellatis parvis molliter hirsutulo-vestitis, subtus cinereis pilis stellatis dense molliter pubescentibus, quintuplinerviis, costis secundariis utroque 8-11; racemis terminalibus densifloris 13-20 cm. longis; rhachi pilis longe stellatis dense brunneo-cinereo hirsuta; floribus foemineis subsessilibus: calyce 5-partito, laciniis aequalibus ovato-oblongis vel late oblongis obtusis 5 mm. longis 3-3.5 mm. latis, dense stellato-hirsutis; stylis semel fere ad basin divisis, laciniis integris; ovario stellato-pubescente; floribus masculinis: pedicellis ca. 1 mm. longis; receptaculo masculino villoso; calycis laciniis 4-5 late ovatis subobtusis extus dense longe stellato-pubescentibus, intus parce pubescentibus; petalis anguste oblongis vel lineari-oblongis 4 mm. longis 1 mm. latis utrinque et praesertim marginibus dense villosis; staminibus 35; filamentis 4 mm. longis fere omnino glabris prope basin pilis paucis excepto; capsulis maturis ignotis.

Type in herb. Chi. Nat. Hist. Mus., collected on north-facing slopes above La Trinidad in cloud forest zone, southwest of Cocollar, state of Sucre, alt. 2100-2200 m., May 5, 1945, *Julian A. Steyermark 62532*, "tree 40-50 feet tall; leaves membranaceous, dark green above, gray below; stems and petioles grayish; calyx gray green."

Superficially, the large leaves and pubescence of this species resemble *C. speciosus* M. Arg. and *C. gossypiifolius* M. Arg., but these species are apparently not closely related. From *C. speciosus* this species is amply distinct in the much smaller pistillate calyx, in the 2-stalked glands at the base of the blade with sub-bilobate subreniform tips, unlobed leaf blades with a pubescence which is shorter and more matted on the lower surface, in the finely and irregularly denticulate margins, the more closely flowered inflorescence, the styles divided only once, the narrower petals and less numerous stamens of the staminate flower, and the stipules not pinnately dissected. From *C. gossypiifolius* it is at once distinguished by the stalked instead of sessile patelliform glands at the base of the leaf-blade and by the type of inflorescence in which the bracts do not bear staminate and pistillate flowers at the base of the inflorescence.

Euphorbia Latazi H.B.K., var. **glabra** Steyermark, var. nov.

A typo differt facibus foliorum utrinque glabris, atque subtus costa media glabra.

Type in herb. Chi. Nat. Hist. Mus., collected along road, Moconoque, above Mucurubá, state of Mérida, alt. 2510 m., April 15, 1944, *Julian A. Steyermark 55924*, "shrub 10 feet tall, with milky sap; leaves subcoriaceous, deep green above, silvery green below; petioles rose-red; flowers pale green-yellowish."

Local name: "lechero."

The flowers in this collection are apparently the same as in

typical *E. Latazi.*

Hieronyma Croizatii Steyermark, sp. nov.

Arbor 18-20-metralis; ramulis dense lepidotis; petiolis 3-4.5 cm. longis supra canaliculatis; laminis subcoriaceis subtus fulvo-argenteis, late ovalibus vel obovato-ovalibus, apice rotundatis vel late obtusis, basi rotundatis, 10-16.5 cm. longis 7-10 cm. latis, utrinque lepidotis, subtus densissime lepidotis atque costa media et costis pilosis, prominenter reticulato-venosis, costis secundariis utroque 7-9; racemis foemineis paniculato-ramosis 6-7.5 cm. longis lepidotis; pedicellis foemineis validis angulosis lepidotis, fructigeris 3-3.5 mm. longis; bracteis late triangulari-ovatis acutis 1-1.5 mm. longis; calyce foemineo minute 5-denticulato extus crebre lepidoto subcoriaceo; fructu pallido-viridi elliptico-pyriformi acuminato 11-12 mm. longo prope medium 8-9 mm. lato glabro.

Type in herb. Chi. Nat. Hist. Mus., collected in rich woods, east of El Junquito, Distrito Federal, alt. 1980-2130 m., June 25, 1944, *Julian A. Steyermark 57005*, "tree 60 feet tall; leaves subcoriaceous, dull green above, silvery buff below; fruit pale green, 1-seeded, fleshy on outside; rachis dull pale green."

This species differs from *H. macrocarpa* (M. Arg.) Pax & Hoffm. of Ecuador in having larger and broader elliptic-ovate leaf blades, which are rounded at the base, main nerves on the lower leaf surface pilose instead of glabrous, and longer petioles. It has the large fruit of *H. macrocarpa*, but the leaf pubescence of *H. Moritziana* var. *Fendleri* (Briq.) Pax & Hoffm., which has smaller fruit and leaves.

Phyllanthus bolivarensis Steyermark, sp. nov.

Frutex 1-1.8 m. altus; ramulis gracilibus teretibus glabris; foliis firme membranaceis ovatis vel ovato-lanceolatis apice obtusis vel rotundatis basi obtusis 2-4.7 cm. longis 1-2.2 cm. latis glabris reticulato-venosis penninerviis, costis secundariis utroque 5-7, supra atroviridibus subtus argenteis; petiolis 3-4.5 mm. longis glabris; floribus ignotis; pedicellis fructiferis filiformibus tenuibus 11-13 mm. longis glabris; capsulis 5.5 mm. altis 6 mm. diam. glabris.

Type in herb. Chi. Nat. Hist. Mus., collected in woods 1-10 kms. northwest of Upata, on road to San Felix, between Upata and Altagracia, state of Bolívar, alt. 700 m., July 31-August 1, 1944, *Julian A. Steyermark 57688*, "one of dominant shrubs in understory; shrub 3-5 feet tall; leaves firmly membranaceous, deep dark green and shining above, silvery below."

This species is related to *P. adiantoides* Klotzsch, but differs in the smaller leaf blades silvery on the lower surface and in the longer petioles. It somewhat resembles *P. lacteus* M. Arg., but has larger leaves which lack the peculiar whitish veining of the lower leaf surface of that species.

Phyllanthus Croizatii Steyermark, sp. nov.

Planta herbacea 3-6 cm. alta; caulibus erectis solitariis simplicibus gracilibus superne patentibus vel recurvatis 0.3-0.4 mm. diam.

substriatulatis supra striatulas lineolis minute puberulis munitis supra medium foliosis; stipulis dimorphis inferioribus triangulari-lanceolatis apice longe acuminatis basi lobis acutis subdenticulatis profunde cordatis 2-2.5 mm. longis; foliis dimorphis membranaceis confertis erecto-adscendentibus subtus lilacinis cuneato-obovatis apice truncatis vel rotundatis apiculatis basi subinaequaliteralibus anguste cuneatis 6-17 mm. longis 3-10 mm. latis, marginibus minute ciliolatis, ceterum glabris, costis secundariis utrinque 4; petiolis 0.6-1 mm. longis; floribus minutis monoicis; floribus foemineis: pedicellis 0.25-0.3 mm. longis; bracteis triangulari-lanceolatis longe acuminatis 0.9 mm. longis; calyce 6-partito, laciniis lineari-oblongis apice obtusis vel apiculatis 0.8 mm. longis 0.3 mm. latis, subintegris vel minute parce denticulatis, longitudinaliter uninervatis; ovario ruguloso; floribus masculis: calyce 5-partito, laciniis late oblongis apice rotundatis 0.5 mm. longis 0.2-0.3 mm. latis, marginibus minute parce denticulatis; staminibus 5, columna staminali 0.2-0.3 mm. longa.

Type in herb. Chi. Nat. Hist. Mus., collected in level rainforest near Taria, state of Yaracuy, alt. 75 m., May 29, 1944, *Julian A. Steyermark 56854*, "leaves pale lavender below."

This species is well marked by the dimorphous stipules and leaves which are relatively large for the small size of the plant, by the shape of the leaves, and by the very small flowers.

Phyllanthus larensis Steyermark, sp. nov.

Arbor 6.8-8.3-metralis; ramulis ultimis 3.5-8 cm. longis glabris; stipulis triangularibus acuminatis 1.5 mm. longis; foliis membranaceis ovatis vel suborbicularibus apice acutis vel rotundatis, basi obtusis vel rotundatis, 1-6.5 cm. longis 1.2-3.6 cm. latis, glabris, subtus pallide cinereo-viridibus, costis secundariis utroque 5-6 tenuibus; petiolis gracilibus 2-3 mm. longis glabris; floribus masculis non ignotis; floribus foemineis: pedicellis 1.5-2 cm. longis gracillimis; calyce 6-partito, laciniis anguste oblongis apice obtusis vel rotundatis, 1.5 mm. longis ca. 1 mm. latis glabris; columna stylari fructigera persistente; capsulis 5-5.5 mm. longis 3.5 mm. latis glabris, exocarpio fusco reticulato; seminibus 3 mm. longis 2.2 mm. latis brunneis nitidis.

Type in herb. Chi. Nat. Hist. Mus., collected on dry chaparral between Trujillo-Lara boundary and Carora, state of Lara, alt. 305 m., May 28, 1944, *Julian A. Steyermark 56813*, "small tree 20-25 feet tall; leaves membranaceous, dull green above, pale gray green below; fruit pendent, pale green."

This species is related, perhaps, to *P. adenophyllus* M. Arg. because of the persistent columella. It resembles *P. biantherifer* Croizat of Brazil from which it differs in the longer petiolate leaves.

Phyllanthus majus Steyermark, sp. nov.

Frutex 1-2.8 m. altus; ramulis dense foliosis nigrescentibus glabratis; foliis firme membranaceis vel subcoriaceis cuneato-obcordatis

FIGURE 58

Phyllanthus majus

A, Habit of staminate flowering branch (X 1); B, One of the inner perianth segments of staminate flower (X 8); C, Fertile stamen detached, staminate flower (X 10).

vel late obovatis, apice emarginatis vel rotundatis, basi acutis basin versus sensim angustatis, 9-20 mm. longis 8-17 mm. latis, revolutis glabris, supra atroviridibus, subtus cinereo-argenteis vel argenteo-viridibus, costis secundariis utroque 4-6 prominulis; petiolis 1-2 mm. longis glabris; floribus masculis: calyce salmoneo-rubro vel cinnabarino vel viridi suffuso 6-partito, laciniis interioribus subovato-oblongis vel ovoideis apice rotundatis basi foveolatis 3.25 mm. longis 2 mm. latis, exterioribus oblongis apice rotundatis 3.25 mm. longis 1.5 mm. latis; staminibus fertilibus 3, 2.25 mm. longis; filamentis ligulatis 1.2 mm. longis 0.5 mm. latis; antheris introrsis basifixis 1.1 mm. longis, apice acute mucronatis; floribus foemineis: pedicellis fructiferis 0.5-1.5 mm. longis; calyce 6-partito, laciniis interioribus late ovatis apice rotundatis 2 mm. longis 1.75 mm. latis, exterioribus ovatis apice rotundatis 2 mm. longis 1.5 mm. latis; ovario 3-loculari; ovulis 2 in quoque loculo; stylis nullis, stigmatibus 3 inconspicuis; capsulis 6.5-7 mm. diam.; seminibus fulvis laevibus 3 mm. longis 2 mm. latis (Fig. 58).

Type in herb. Chi. Nat. Hist. Mus., collected on forested south-facing slopes overlying sandstone, on "Cave Rock" above "Cave Camp," Ptari-tepuí, state of Bolívar, alt. 1810 m., October 29, 1944, *Julian A. Steyermark 59482*, "shrub 3-8 feet tall; leaves firmly membranaceous, deep dark green above, gray silvery below; flowers nodding; pedicel and perianth vermilion-red or salmon-red."

Also collected in Territorio Federal Amazonas: on moist exposed cliff face with large bromeliads *(Brocchinia Tatei)* growing on vertical southeastern-facing sandstone bluffs near Caño Negro (tributary of Caño Iguapo), Cerro Duida, alt. 1520 m., August 26, 1944, *Steyermark 58035*, "shrub 5-8 feet tall; leaves subcoriaceous, dark green above, silvery green below; calyx spreading, pale green; corolla segments pale green suffused with brick-salmon."

Tate 1181 from Auyan-tepuí and *Tate 447* from Mount Duida, previously referred to *P. vacciniifolius* M. Arg., are identical with this species. The collection of *Tate 447* from Duida was considered by Dr. Gleason as merely a large-leaved type of *P. vacciniifolius*, but a careful study of recent collections made by the present author reveals several good differences between this new species and *P. vacciniifolius*. These differences are as follows: the staminate flowers are larger and the pistillate segments broader in *P. majus* than in *P. vacciniifolius;* the fruiting peduncles in *P. majus* are much shorter, measuring 0.5-1.5 mm. long, whereas in *P. vacciniifolius* they are up to 3 mm. long, more filiform, and decidely clavate; the leaves in *P. majus* are larger, firmer, and more coriaceous in *P. majus;* the leaf-blades are more prominently nerved in *P. majus* and are narrowed to a subdecurrent base, the petiole being short and thick, whereas in *P. vacciniifolius* the blade is narrowed to a more slender petiole without being decurrent; and in *P. vacciniifolius* the leaf blades are proportionately broader in the upper half than in *P. majus*. Furthermore, the twigs are thicker in *P. majus* and have a denser foliose appearance, and are not elongated-arcuate as in *P.*

vacciniifolius. The upper surface of the mature leaf blades in *P. majus* has a grayish caste.

Phyllanthus orinocensis Steyermark, sp. nov.

Frutex 3.3 m. altus; ramulis ultimis gracilibus glabris; foliis membranaceis subtus argenteis elliptico-ovatis apice acuminatis basi acutis vel subacutis 1.8-4 cm. longis 1-2 cm. latis glabris, costis secundariis utroque 6-8 prominentibus adscendenti-patentibus; petiolis gracilibus 5-10 mm. longis glabris.

Type in herb. Chi. Nat. Hist. Mus., collected between Sabana Grande and Base River (Caño Negro), at southeastern base of Cerro Duida, Territorio Federal Amazonas, alt. 210 m., August 23, 1944, *Julian A. Steyermark 57891*, "shrub 4 feet tall; leaves membranaceous, silvery below, dull green above."

Although the type collection is sterile, the species is well marked by the slender filiform branches, slender petioles, acuminate leaves, and conspicuous lateral nerves on both leaf surfaces. From *P. lacteus* M. Arg. it may be distinguished by lacking the white papillate venation of the lower leaf surface peculiar to that species.

Phyllanthus zanthoxyloides Steyermark, sp. nov.

Frutex 1.3-1.6 m. altus; ramulis pilis brevibus densis ochroleucis vestitis; stipulis lanceolatis acuminatis 2-4 mm. longis; foliis distichis subcoriaceis lanceolato- vel ovato-ellipticis apice plerumque acuminatis basi obtusis vel subacutis 5.5-11 cm. longis 2-4.5 cm. latis, utrinque granulis sessilibus minutissimis albis munitis, ceterum glabris, costis secundariis utroque latere 6-7 anastomosantibus; petiolis 2-5 mm. longis granulis sessilibus minutissimis munitis; floribus monoicis longe pedicellatis; floribus masculis: pedicellis floriferis ca. 2 mm. longis; calyce 5-partito, laciniis late ovatis vel ovato-oblongis 1.5 mm. longis 1.2-1.3 mm. latis obtusis glabris; disco annulari; staminibus 3; filamentis brevibus 0.5 mm. longis; antheris subgloboso-oblongis 0.5 mm. longis floribus foemineis subsolitariis: pedicellis floriferis 6-9 mm. longis, fructiferis 17-25 mm. longis; calyce 6-partito, laciniis ovato-oblongis vel oblongis apice obtusis vel rotundatis vel acuminatis 2-2.1 mm. longis 1.5-1.75 mm. latis; disco annulari; stylis 3, semel dichotome divisis, laciniis ca. 0.5 mm. longis; ovario subdepresso-globoso subsexanguloso 1.9 mm. diam.; ovulis 2 in quoque latere; columella fructigera persistenti; capsulis 7-8 mm. longis, extus fuscis granuloso-maculatis munitis; seminibus pallide brunneis 4 mm. longis 3 mm. latis laevibus glabris.

Type in herb. Chi. Nat. Hist. Mus., collected in Montaña de Aguacate, along Quebrada de Pajarral, tributary to Río Caripe, northeast of Alto de Aguacate, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 19, 1945, *Julian A. Steyermark 62189*, "shrub 4-5 feet tall; fruit pendent, turning rose; leaves subcoriaceous, dark green above, dull green below; perianth pale green within with dull red at base."

Local name: "corallito."

The subpinnate arrangement and appearance of the leafy branches is reminiscent of some species of *Zanthoxylum*. This species somewhat resembles *P. nobilis* M. Arg., but differs in the much longer fruiting pedicels, smaller fruits, monoecious flowers, subpinnate leaf arrangement, and differently nerved and shaped leaves. It appears to be closely related to *P. cladotrichus* M. Arg. of Brazil, from which it differs in the longer petioles, broader leaf blades with more prominently veined lower surface, longer fruiting pedicels, 3 stamens with free filaments above, calyx lobes not white-margined, straighter and less zigzag branches, which are densely covered with fine grayish-brown excrescences instead of dark red ones as described in *P. cladotrichus*.

AQUIFOLIACEAE

Ilex culmenicola Steyermark, sp. nov.

Frutex 1-metralis; ramulis junioribus rugulosis glabris; foliis petiolatis, petiolis rugulosis 4-5 mm. longis 2 mm. diam. glabris; laminis coriaceis apice obtusis mucronatis basin versus angustatis, 3-4.5 cm. longis 1.5-2.5 cm. latis, glabris epunctatis, marginibus integerrimis revolutis vel subrevolutis, nervis lateralibus utroque 5 divaricate adscendentibus simplicibus vel prope marginem dichotomis supra prominente graciliter sulcatis; floribus masculis ignotis; pedunculo foemineo solitario 12 mm. longo glabro; calycis foeminei dentibus 5 late suborbiculari-triangularibus apice subito obtuse acuminatis sub anthesi 1.5 mm. longis 2-3 mm. latis, sub fructu 2 mm. longis 5 mm. latis, glabris marginibus minute ciliolatis excepto; drupa hemispherica 8 mm. diam.

Type in herb. N.Y. Bot. Gard., photo of type in herb. Chi. Nat. Hist. Mus., collected on slopes of Ridge 24, summit of Mount Duida, Territorio Federal Amazonas, alt. 1830-2000 m., November 26-December 16, 1928, *G. H. H. Tate 424*, "3 feet high."

This species is characterized by its epunctate, coriaceous, entire leaves with lateral nerves prominently sulcate above (at least in the dried state), non-sulcate and not prominent beneath, and by the one-flowered pistillate inflorescences. It is related to *I. umbellata* Kl., from which it differs in the smaller leaves, and to *I. Sellowii* Loes., from which it is distinguished by the more coriaceous leaves, inconspicuous lateral nerves, and one-flowered pistillate inflorescences.

Ilex Gleasoniana Steyermark, sp. nov.

Frutex; ramulis atque apicibus ramulorum minute puberulis; foliis petiolatis, petiolis rugulosis supra sulcatis 3-5 mm. longis ca. 1 mm. diam. glabris; laminis obovato-oblongis apice rotundatis breviter mucronatis basin versus angustatis 2-3.2 cm. longis 8-13 mm. latis glabris costa media supra per sulcum minutissime puberulis excepto punctatis vel obscure punctatis, marginibus integerrimis subrevolutis, nervis lateralibus obsoletis vel utroque 5 obscuris, costa media supra sulcata subtus prominente; floribus masculis axillaribus solitariis; pedicellis 2.5-5 mm. longis parce puberulis; calycis dentibus

5 suborbicularibus apice rotundatis 0.5 mm. longis 1.5 mm. latis; petalis 5 obovato-oblongis apice rotundatis 2.5 mm. longis 1.6-1.7 mm. latis glabris; filamentis basi dilatatis 1 mm. longis glabris; antheris 1 mm. longis; ovario glabro.

Type in herb. N.Y. Bot. Gard., photo of type in herb. Chi. Nat. Hist. Mus., collected near summit of Ridge 25, summit of Mount Duida, Territorio Federal Amazonas, alt. 2000 m., November 26-December 16, 1928, *G.H.H. Tate 526*, "a bush."

From *I. apicidens* N. E. Brown of Mount Roraima, to which it may be related, this species differs in the completely entire narrower blades with non-sulcate lateral nerves on the upper surface.

Ilex karuaiana Steyermark, sp. nov.

Arbor 8-13-metralis; ramulis glabris, novellis sulcatis; foliis petiolatis, petiolis supra canaliculatis 5-7 mm. longis glabris; laminis firme membranaceis vel subcoriaceis ovato- vel lanceolato-ellipticis apice acute acuminatis vel subcuspidatis cuneatis vel subito subacutis in petiolum decurrentibus 5-9 cm. longis 1.4-4 cm. latis glabris parce atque obscure punctatis vel epunctatis, marginibus remote adpresso-serrulatis, nervis lateralibus utroque 5-6 subtus subprominulis anastomosantibus, costa media supra sulcata subtus prominente; floribus masculis bene evolutis in axillis foliorum fasciculatis semel vel bis dichotome furcatis 5-12-floris subumbellatis; pedunculis 1-2 cm. longis; pedicellis 2.5-4 mm. longis minute puberulentibus; floribus 4-nervis; calycis dentibus suborbicularibus apice rotundatis 1 mm. longis 1.5 mm. latis, integerrimis vel irregulariter denticulatis ciliolatis; petalis basi connatis, tubo corollae 1 mm. longo, lobis suborbicularibus apice rotundatis 1.2-1.5 mm. longis 2 mm. latis; staminibus 4, filamentis 1.1-1.2 mm. longis glabris inferne incrassatis 0.5 mm. supra basin tubi corollae adnatis; antheris suborbicularibus 0.8 mm. longis; floribus foemineis ignotis; pedunculis foemineis sub fructu 8-15 mm. longis; drupa subhemispherica 4.5 mm. diam.

Type (staminate plant) in herb. Chi. Nat. Hist. Mus., collected in dense forest at base of Ptari-tepuí along Río Karuai, state of Bolívar, alt. 1220 m., November 27, 1944, *Julian A. Steyermark 60660*, "tree 40 feet tall; leaves firmly membranaceous, deep green above, pale green below; flowers greenish-yellow."

Cotype collections (pistillate) in herb. Chi. Nat. Hist. Mus., all from the state of Bolívar, are: by first small ridge, lower south-facing slopes, Ptari-tepuí, between Río Karuai and first ridge above Río Karuai, alt. 1220 m., November 28, 1944, *Steyermark 60669*, "tree 25 feet tall; leaves firmly membranaceous, deep green above, dull green below; fruit dull green with dull lavender;" wooded slopes of Quebrada O-paru-má, between Santa Teresita de Kavanayén and Río Pacairao (tributary of Río Mouak), alt. 1065-1220 m., November 20-21, 1944, *Steyermark 60370*, "tree 30 feet tall; leaves subcoriaceous, deep green above, dull green below; fruit dull pale green and shining."

Local name: "tarebi-yek."

This species differs from *I. brevicuspis* Reiss. of Brazil in having 5-6 instead of 6-9 lateral nerves which are more prominently developed and anastomosing on the lower leaf surface, leaf margins minutely appressed-serrulate from base to apex, rounded instead of triangular-acute tips of the calyx lobes of the staminate flowers, and shorter and broader staminate calyx lobes.

Ilex nervosa Triana, var. **glabrata** Steyermark, var. nov.

A typo differt plerumque laminis foliorum subtus glabris; floris foemineis 5-meris; pedicellis 2.5-2.75 mm. longis glabris; calyce dentibus late triangularibus apice subacutis 1 mm. longis 1.25 mm. latis; petalis basi paullo 0.1 mm. connatis, lobis late oblongis apice rotundatis 2 mm. longis 1.5 mm. latis; staminibus 5, filamentis 1.3 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on rich steep northwest- and northeast-facing forested slopes above "La Isla," above Tabay, state of Mérida, alt. 2285-2745 m., *Julian A. Steyermark 56653,* "tree 40 feet tall; leaves coriaceous, dark green above, dull paler green below, rugose-areolation above; corolla white, lobes inrolled; ovary pale green; calyx and pedicel pale buff-green."

Also collected from same locality by *Gehriger, no. 483.*

Local name: "jagua negro."

This variety differs from typical *I. nervosa* in the leaf blades which are glabrous on the lower surface. From *I. truxillensis* Turcz. it may be distinguished by the different shape of the leaf blade with entire to subentire margins, epunctate lower leaf surface, and fascicled pistillate flowers.

Ilex ptariana Steyermark, sp. nov.

Frutex vel arbor 6.5-13-metralis; ramulis glabris, novellis sulcatis; foliis petiolatis, petiolis 6-10 mm. longis glabris; laminis coriaceis vel subcoriaceis subtus argenteo-viridibus obovato- vel elliptico-oblongis apice rotundatis vel obtusis mucronatis basin versus angustatis subacutis vel obtusis 4-9 cm. longis 2-5 cm. latis glabris subtus epunctatis, marginibus integerrimis subrevolutis, nervis lateralibus utroque 7-8 fere angulo recto patentibus in novellis obsoletis, costa media subtus prominente; inflorescentia masculina in axillis foliorum fasciculata vel ad ligni novelli basin congesta multiflora longe pedunculata, pedunculis usque bracteis 1.5 mm. longis pluridentatis vel laciniatis; calycis dentibus 4 vel 6 suborbicularibus apice rotundatis 1.5 mm. longis 2.5 mm. latis glabris; petalis 6-7 basi leviter connatis, tubo 0.3 mm. longo, lobis obovato-oblongis apice late rotundatis 4.2-4.5 mm. longis 3.3 mm. latis in medio paullo incrassatis; staminibus 6-7, filamentis basi dilatatis glabris, 4 eorum 2.5 mm. longis, duobus minoribus 0.75 mm. longis; antheris late oblongis 1.5 mm. longis 1 mm. latis; floribus foemineis solitariis: pedicellis adscendentibus 16-28 mm. longis, 9-11 supra basin plerumque minute bi-bracteatis, bracteis late ovatis; bracteis

e basi pedicellorum late ovatis ad 2 mm. longis; calycis lobis 5 late suborbiculari-ovatis apice obtusis 2.5-3 mm. longis 2.5-3 mm. latis, glabris, marginibus vetustioribus paullo irregulariter erosis; stigmatibus discoideis ad 2 mm. longis (Figs. 59 and 60).

Type (staminate) in herb. Chi. Nat. Hist. Mus., collected on densely forested steep south-facing slopes overlying sandstone, between "Cave Rock" and base of high sandstone bluffs, Ptari-tepuí, state of Bolívar, alt. 2285-2405 m., October 30, 1944, *Julian A. Steyermark 59574*, "shrub 20 feet tall; leaves ascending, coriaceous, deep green and shining above and silvery green below, subrevolute; pedicels and calyx pale green; corolla lobes 7, spreading, white, 4 mm. long and 4 mm. broad; filaments 7, white; anthers pale brown; ovary yellow."

Cotype (pistillate) in herb. Chi. Nat. Hist. Mus., collected on steep forested slopes at base of first line of sandstone bluffs, on south-facing part, east of "Cave Rock," Ptari-tepuí, state of Bolívar, alt. 2130 m., November 4, 1944, *Julian A. Steyermark 59829*, "tree 30-40 feet tall; leaves subcoriaceous-subrevolute below, rich green above, silvery green below, subhorizontal to ascending; pedicels spreading horizontally, pale green; calyx pale green; young fruit or ovary dull purple or dull green suffused with dull lavender; stigma pale green."

This species is distinguished by the long pistillate peduncles, large calyx and corolla, rounded tips of the leaves, and horizontally spreading lateral nerves which do not anastomose on the lower surface of the leaf blades.

From *I. Jenmanii* Loes. this species differs in the rounded leaf tip, fewer pairs of lateral nerves which are not connected by anastomosing veinlets, larger staminate calyx and corolla, longer staminate pedicels, and less branched staminate inflorescence. From *I. guianensis* (Aubl.) O. Kuntze it differs in having larger staminate flowers, longer staminate peduncles, leaves with longer petioles, and more horizontally spreading lateral nerves farther spaced from one another and not anastomosing between the lateral nerves.

From the closely related *I. integerrima* (Vell.) Reiss. of Brazil it differs in its longer staminate peduncles of varying lengths, larger staminate calyx, wider staminate petals, and more horizontally spreading lateral nerves less anastomosing on the lower surface between the nerves, while from *I. grandis* Reiss. of Brazil it differs in its longer staminate peduncles, and the leaf blades with more horizontally spreading lateral nerves which are less anastomosing.

In the present species the leaves of the pistillate plants are narrower than those of the staminate specimen.

Ilex stenophylla Steyermark, sp. nov.

Frutex 2.8-3.8-metralis; ramulis dense minute puberulis; foliis breviter petiolatis vel subsessilibus, petiolis 2.5-3 mm. longis minute puberulis; laminis coriaceis anguste oblanceolatis vel

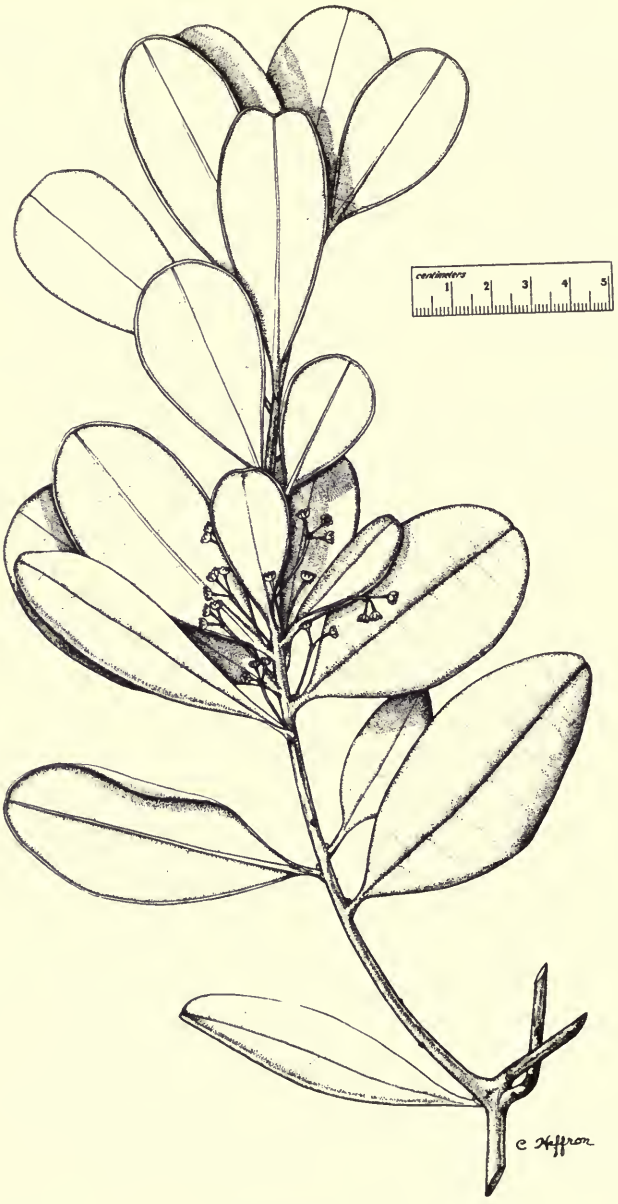


FIGURE 59

Ilex ptariana

Habit of staminate flowering branch.

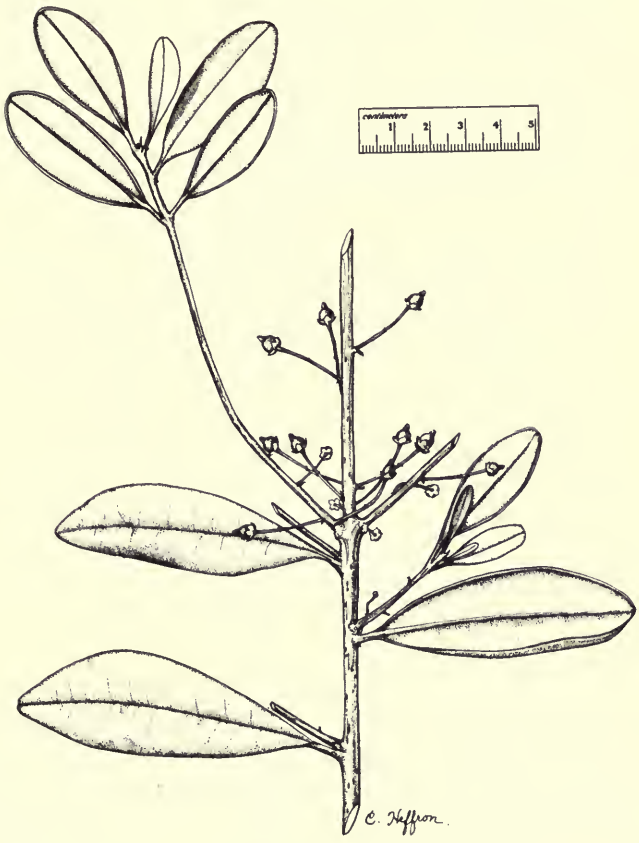


FIGURE 60

Ilex ptariana

Habit of pistillate flowering branch.

anguste oblanceolato-ellipticis apice rotundatis vel obtusis basi acutis 2-4.5 cm. longis 8-15 mm. latis glabris subtus punctatis, marginibus crenulato-serrulatis, nervis lateralibus utroque 5-6 anastomosantibus subtus subprominulis; inflorescentia masculina in axillis foliorum semel vel bis dichotome 7-12-floris subumbellatis, pedunculis 6-7 mm. longis minute puberulentibus, pedicellis 1-2 mm. longis minute puberulis; bracteis triangularibus acutis 0.6-0.7 mm. longis minute puberulis; calyce 4-lobato, tubo 1.5 mm. longo 1.5 mm. lato parce minute puberulente, lobis suborbicularibus apice rotundatis 0.4 mm. longis 1.3 mm. latis, ciliolatis, extus parce puberulentibus; petalis 4 basi connatis, tubo 1 mm. longo, lobis late oblongis vel suborbiculari-oblongis apice rotundatis 1.6 mm. longis 1.5 mm. latis, trinerviis; staminibus 4, filamentis 0.7 mm. longis glabris ad basin segmentorum corollae insertis; antheris suborbiculari-oblongis 0.7 mm. longis 0.6 mm. latis; ovario 0.5 mm. alto 0.7 mm. lato; stylo 0.6 mm. longo.

Type (staminate plant) in herb. Chi. Nat. Hist. Mus., collected on moist exposed cliff face with large bromeliad, southeastern-facing sandstone bluffs near Caño Negro (tributary of Caño Iguapo), Cerro Duida, Territorio Federal Amazonas, alt. 1095-1520 m., August 26, 1944, *Julian A. Steyermark 58038*, "shrub 5-8 feet tall; leaves coriaceous, deep green above, dull green below; corolla white; calyx and pedicel green."

This species simulates *I. dumosa* Reiss., *I. affinis* Gardn., *I. chamaedryfolia* Warm., *I. amara* (Vell.) Loes., and *I. oligoneura* Loes. From *I. dumosa* it differs in its punctate leaves, more densely pubescent stems, and smaller corolla. From *I. chamaedryfolia* it differs in the pubescent stems and pedicels. From *I. oligoneura*, *I. amara*, and *I. affinis* it differs in leaf shape, pubescence, and type of inflorescence.

Ilex subrotundifolia Steyermark, sp. nov.

Frutex 1.3-2.8 m. altus; ramulis glabris, junioribus sulcatis; foliis petiolatis, petiolis 4-5 mm. longis 2.5-3 mm. latis glabris; laminis coriaceis subtus pallido-viridibus, suborbicularibus apice rotundatis vel truncatis 2-6 cm. longis 2-5.8 cm. latis glabris minute punctulatis, marginibus integerrimis revolutis, nervis lateralibus utroque 3-7, plerumque 4-5, patento-subadscendentibus subtus prominulis vel inconspicuis supra subprominulis in novellis subobsoletis, costa media subtus prominente; inflorescentia foeminea solitaria in axillis foliorum; pedicellis foemineis 1-3.5 mm. longis glabris; calycis dentibus 4 triangulari-suborbicularibus obtusis vel subito subacuminatis sub anthesi 1-1.5 mm. longis 1.5-2 mm. latis sub fructu ad 4 mm. latis ciliolatis; petalis basi leviter connatis, tubo 0.7-0.8 mm. longo, lobis late oblongis apice rotundatis 2.2 mm. longis 1 mm. latis; filamentis 0.7 mm. longis 0.7 mm. supra basin tubi corollae adnatis; drupa globulari 4 mm. alto 4 mm. diam. (immatura) (Fig. 61).

Type in herb. Chi. Nat. Hist. Mus., collected in dry rocky thickets on uneven ground, Gran Sabana, between Mission of Santa Teresita

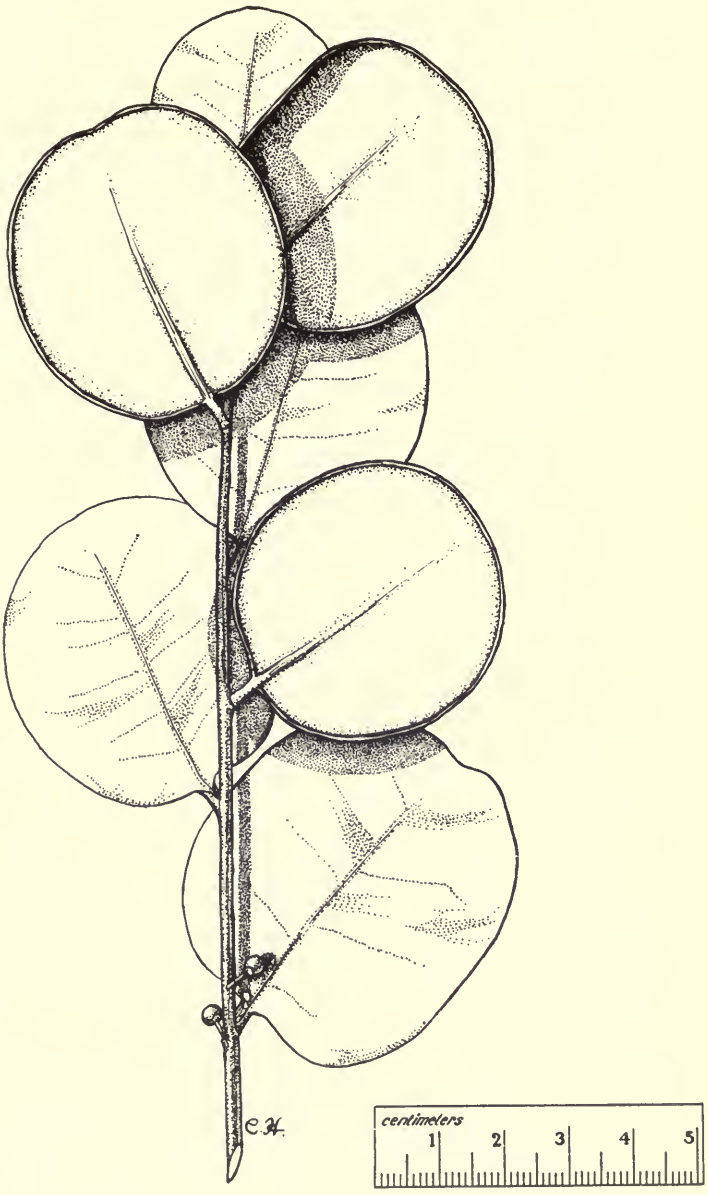


FIGURE 61
Ilex subrotundifolia
Habit of pistillate flowering branch.

de Kavanayén, northwest to Río Karuai, state of Bolívar, on large mesa, alt. 1220 m., October 26, 1944, *Julian A. Steyermark 59394*, "shrub 4-5 feet tall; leaves coriaceous, rich green above, pale green below; petals white; calyx pale green."

Ilex Tateana Steyermark, sp. nov.

Frutex 2.8-3.3-metralis; ramulis glabris sulcatis vel striatis; foliis petiolatis, petiolis rugulosis 6-9 mm. longis 4 mm. latis glabris; laminis coriaceis elliptico-oblongis apice rotundatis basi obtusis sensim angustatis 13-18 cm. longis 4.5-7.5 cm. latis glabris subpunctatis vel punctatis, marginibus late obscure crenulatis, nervis lateralibus utroque 10-13 supra paullo sulcatis subtus prominulis; inflorescentia masculina in axillis foliorum fasciculata simplice vel bis dichotoma; pedunculis 2-5-floris brevibus ad 4-5 mm. longis glabris; pedicellis 1.5-5 mm. longis glabris; floris 4-meris; calycis dentibus suborbicularibus apice rotundatis 0.7 mm. longis 1.3 mm. latis glabris, tubo 0.8 mm. longo; petalis obovato-oblongis apice late rotundatis 3.1 mm. longis 2 mm. latis glabris; staminibus 4, filamentis 2.3 mm. longis glabris; antheris 1.3 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on southeastern-facing sandstone bluffs near Caño Negro (tributary of Caño Iguapo), Cerro Duida, Territorio Federal Amazonas, alt. 1095-1520 m., August 26, 1944, *Julian A. Steyermark 58022*, "sprangling shrub 8-10 feet tall; flowers greenish-white; leaves coriaceous, dark green above, dull green below; pedicels pale green."

Also collected on slopes of Ridge 25, summit of Cerro Duida, alt. 2750-3000 m., *Tate 424* (herb. N.Y. Bot. Gard.).

This species is characterized by the punctate, large, remotely subcrenulate leaf blades with rounded apices and short petioles, and by the fasciculate flower clusters which have simple to once or twice-branched peduncles. From *I. Pierreana* Loes. of Brazil this species differs in the leaf-blades less reticulate on their lower surface, smaller petals, shorter petioles and punctate leaves. From *I. laurina* H.B.K. of the Andes it differs in the rounded tip of the leaf blade, and a different type of crenation as well as a different inflorescence. From *I. affinis* Gardn. it differs in the punctate leaves and smaller petals, while from *I. paraguariensis* St. Hil. it may be distinguished by the punctate, less crenulate leaves.

Ilex venezuelensis Steyermark, sp. nov.

Frutex 2.8-metralis; ramulis dense puberulis; foliis petiolatis, petiolis 3-4 mm. longis dense puberulentibus; laminis coriaceis supra atroviridibus anguste oblongis vel anguste elliptico-oblongis apice obtusis vel rotundatis subito mucronatis vel abrupte breviter cuspidatis basi obtusis 1.5-2.9 cm. longis 0.6-1 cm. latis glabris subtus subpunctatis vel brunneo-punctatis, marginibus integerrimis revolutis, nervis lateralibus utroque 4-5 adscendentibus subtus paullo prominulis supra obsoletis, costa media supra valde sulcata; inflorescentia foeminea in axillis foliorum solitaria; pedicellis 7-13 mm. longis solitariis puberulentibus; floribus foemineis 4-meris;

FIGURE 62

Ilex venezuelensis

Habit of pistillate flowering branch (X 1).

calycis tubo 1 mm. alto 2 mm. lato puberulenti; calycis dentibus 1 mm. longis extus dense puberulis late deltoideis apice subito in acumen oblongum obtusiusculum prolongatis; petalis liberis vel fere liberis oblongis obtusis 2.5 mm. longis 1.5 mm. latis; staminibus 4 basi petalorum insertis, filamentis dimidio inferiori dilatatis 1.1-1.2 mm. longis glabris; antheris suborbicularibus 0.5 mm. longis 0.5 mm. latis; ovario subhemisphaerico 1 mm. alto 1.5 mm. lato glabro; stigmate depresso-capitato 1 mm. diam. (Fig. 62).

Type in herb. Chi. Nat. Hist. Mus., collected on high moist ridge top, summit of Cerro Duida, Territorio Federal Amazonas, alt. 1820-2075 m., September 4, 1944, *Julian A. Steyermark 58340*, "shrub 5 feet tall; leaves coriaceous, dark green above, dull green below."

This species differs from *I. chamaedryfolia* Reiss. of Brazil in the entire leaves, densely puberulent stems and pedicels, the rather elongated pedicels, and the free or almost free petals. From *I. vacciniifolia* Kl. it may be distinguished by the pubescent stems and pedicels, solitary pistillate flowers, and pubescent pistillate calyx, while from *I. asperula* Mart. it may be separated by the glabrous lower leaf surface and details of the flower.

Ilex vesparum Steyermark, sp. nov.

Frutex vel arbor 2.8-10-metralis; ramulis glabris, novellis sulcatis nigrescentibus; foliis longe petiolatis, petiolis 11-30 mm. longis supra canaliculatis glabris; laminis coriaceis vel subcoriaceis late ovatis apice plerumque subito acuminatis vel cuspidatis, acumine 3-6 mm. longo acuto vel subacuto, basi rotundatis, 3.5-11.5 cm. longis 1.7-6 cm. latis glabris subtus minute punctulis minutissimis dense obtectis, marginibus integerrimis vel obscure remote adpresso-serrulatis, nervis lateralibus utroque 8-14 utrinque prominentibus patenti-adscendentibus anastomosantibus subtus grosse reticulatis, costa media subtus prominente; inflorescentia in axillis foliorum; inflorescentia masculina fasciculata longe pedunculata, 7-floris floribus umbellatis; pedunculis 1.5-2.5 cm. longis glabris; pedicellis 4-5 mm. longis glabris; floribus masculinis 5-6-meris; calycis lobis 4-6 subaequalibus, tribus ceteris paullo majoribus, late ovatis vel suborbicularibus obtusis vel acuminatis vel rotundatis 1-1.5 mm. longis 0.75-1.5 mm. latis glabris integerrimis vel dimidio superiori paullo irregulariter denticulatis; petalis basi connatis, tubo 0.4 mm. longo, lobis late oblongis apice rotundatis 3 mm. longis 2.4-2.5 mm. latis; staminibus 5-6, filamentis basi dilatatis prope basin tubi corollae insertis 1.8-2 mm. longis; antheris late oblongis 1.5 mm. longis; pistillodio 1 mm. alto 1.5 mm. diam.; inflorescentia foeminea solitaria vel umbellata 3-flora, pedunculis fructiferis 1.3-1.4 cm. longis glabris; pedicellis fructiferis 7-11 mm. longis glabris; bracteis late triangularibus acutis glabris sub medio pedicelli insertis; calycis dentibus 6 late ovatis vel triangulari-subrotundatis apice subito acuminatis 1-1.2 mm. longis 1.5 mm. latis (Fig. 63).

Type (staminate plant) in herb. Chi. Nat. Hist. Mus., collected among shrubby dwarfed growth along knife-edge crest of ridge leading

FIGURE 63

Ilex vesparum

Habit of staminate flowering branch (X 1).

to summit, Cerro Peonía (Cerro Los Pajaritos), above Santa Cruz, headwaters of Río Manantiales, east of Bergantín, state of Anzoátegui, alt. 2000-2300 m., March 21, 1945, *Julian A. Steyermark 61659*, "shrub 10-15 feet tall; leaves subcoriaceous, deep green above, dull pale green below; flowers sweet-fragrant; corolla white, spreading; pedicel and calyx dull green; filaments white; stamens 4-5."

Cotypes (fruiting plants) in herb. Chi. Nat. Hist. Mus., collected in cloud forest on wooded summit of Cerro Peonía (Cerro Los Pajaritos), above Santa Cruz, headwaters of Río Manantiales, east of Bergantín, state of Anzoátegui, alt. 2350 m., March 21, 1945, *Steyermark 61681*, "fruiting specimen of same as *61659;* tree 25-30 feet tall; common; leaves coriaceous, dark green above, dull green below;" rocky sandstone summit of eastern peak, Cerro Turumiquire, state of Sucre, alt. 2500 m., May 6, 1945, *Steyermark 62620*, "shrub 5-8 feet tall; leaves coriaceous, dull deep green and shining above, dull pale green below."

The specific name of this species is given because of the abundance of the millions of wasps (*Polistes versicolor* var. *vulgaris* J. Bequaert) which densely covered the trunk, limbs, and branches of the trees and shrubs inhabiting the cloud forest on the summit of Cerro Peonía (Cerro Los Pajaritos), where the type and cotype specimens were collected. These wasps were hibernating in this moist forest during the dry season and were so numerous that their brown abdomens, crowded close together in their semidormant stage over the trunks and branches of the trees, gave the appearance of a luxuriant festoon of moss or leafy liverwort growth suspended from the bark of the tree.

This species somewhat resembles the West Indian *I. montana* (Sw.) Griseb., from which it differs in the combination of having longer peduncles, broader staminate corolla lobes, umbelliform inflorescences, relatively longer petioles, larger leaf blades with more horizontally spreading lateral nerves, and longer bracts of the inflorescence.

From *I. Jenmanii* Loes., which it also resembles, it may be distinguished by the broadly rounded or subcordate base of the leaf blade, more elongated acuminate apex, 5-6- instead of 4-merous flowers, gamopetalous corolla with larger corolla lobes of the staminate flower, acuminate-tipped larger staminate calyx lobes, and longer pedicels of the umbelliform staminate inflorescences.

CELASTRACEAE

Maytenus apiculata Steyermark, sp. nov.

Arbor 13-metralis; ramulis glabris; petiolis anguste decurrentibus supra canaliculatis, 6-10 mm. longis, glabris; laminis subcoriaceis elliptico-oblongis apice subacutis vel subobtusis, basi obtusis vel subacutis, 7-13.5 cm. longis, 3-6 cm. latis, glabris, margine integerrimo, nervis lateralibus utroque 10-14 arcuato-adscendentibus prope margines 3-7 mm. anastomosantibus, costa media utrinque

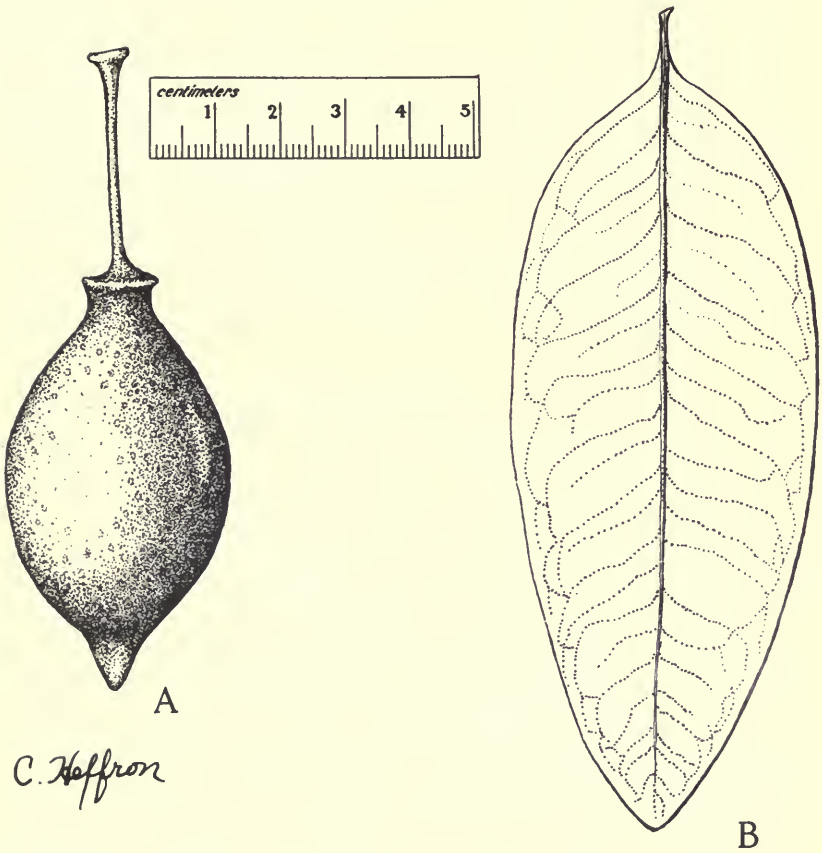


FIGURE 64

Maytenus apiculata

A, Fruit with pedicel (X 5); B, Leaf (X 1).

FIGURE 65

Maytenus coriacea

A, Habit of fruiting branch (X 2/3); B, Seed (X 4.5).

prominente; inflorescentiis axillaribus 5-6 glomerulatis; pedicellis fructiferis 0.5-1 cm. longis glabris; calycis laciniis late suborbicularibus apice late rotundatis 0.7 mm. longis 1 mm. latis glabris, marginibus fusco-subfimbriatis excepto; antheris suborbiculari-ovatis, apice rotundatis 0.2-0.3 mm. longis; filamentis 0.7 mm. longis basi dilatatis; ovario conoideo superne angustato; fructibus obovato- vel ovato-ellipticis superne 1.5-2 mm. rostratis basi subito attenuatis acutis, 1-1.5 cm. longis 0.6-0.9 cm. latis, glabris; semine 1 (Fig. 64.)

Type in herb. Chi. Nat. Hist. Mus., collected on wooded slopes of Quebrada O-paru-má, between Santa Teresita de Kavanayén and Río Pacairao (tributary of Río Mouak), state of Bolívar, alt. 1065-1220 m., November 20-21, 1944, *Julian A. Steyermark 60385*, "tree 40 feet tall; leaves subcoriaceous, dark green above, dull green below; fruit dull green."

This species is apparently closely related to *M. guianensis* Kl., from which it is immediately distinguished by the ovate- or obovate-elliptic fruits which are narrowed at the base and conspicuously apiculate or rostrate.

Maytenus coriacea Steyermark, sp. nov.

Frutex ad 3.5-metralis; ramulis erecto-adscendentibus superne aggregato-verticillatis teretibus glabris; petiolis 5-10 mm. longis glabris; laminis coriaceis subtus pallido-viridibus oblongo- vel elliptico-lanceolatis vel oblanceolatis apice obtusis basi cuneatis 5-12 cm. longis 1-3.5 cm. latis glabris, marginibus utroque grosse 12-15 crenato-serratis, costa media utrinque prominente praecipue subtus, nervis lateralibus utroque 5-6 supra obsoletis subtus prominulis valde adscendentibus; inflorescentiis axillaribus 1-5-floris; pedunculis fructiferis 7-20 mm. longis glabris; bracteis ovato-triangularibus 0.8-1 mm. longis, marginibus glandulari-fimbriatis vel erosis; pedicellis fructiferis 7 mm. longis glabris; calycis laciniis fructiferis late suborbicularibus apice late rotundatis sub fructu 0.8-1 mm. longis 0.8-1.2 mm. latis, marginibus valde fusco-fimbriatis; capsulis late turbinatis obtuse trigonis trisulcatis trilocularibus; valvulis patentibus extus pallido-viridibus transverse rugulosis intus atrosanguineis 7-8 mm. longis 6-7 mm. latis glabris; seminibus solitariis obovatis 5.5-6 mm. longis 3.2-3.6 mm. latis, arillo carnoso aurantiaco (Fig. 65).

Type in herb. Chi. Nat. Hist. Mus., collected above El Molino, between El Molino and El Quebradón, state of Mérida, alt. 2010-2135 m., May 14, 1944, *Julian A. Steyermark 56509*, "shrub 10 feet tall; leaves coriaceous, dark green above, pale green beneath; fruit pale green with fleshy orange aril."

This species is related to *M. verticillata* (R. & P.) DC., from which it is distinguished by the larger, more coriaceous leaves obtuse at the apex, with coarsely crenate-serrate margins, longer fruiting peduncles and pedicels, larger valves of the fruit, and slightly larger seeds. In *M. coriacea* the nerves on the upper leaf surface

are practically obsolete, but more or less prominent on the lower surface, whereas in *M. verticillata* the nerves on both leaf surfaces are evident.

Maytenus guianensis Kl., forma **crenulata** Steyermark, f. nov.

A typo differt marginibus foliorum conspicue crenulatis vel crenatis.

Type in herb. Chi. Nat. Hist. Mus., collected in headwaters of Río Maravilla, slopes of Fila Grande, between Los Chorros and Cerro Negro, east of Bergantín, state of Anzoátegui, alt. 900-1400 m., March 23, 1945, *Julian A. Steyermark 61731*, "tree 25 feet tall; leaves subcoriaceous, deep dark green above, dull paler green below; fruit obovoid, dull green."

Also collected in bamboo woods on ridge top, dryish forested slopes, Cerro La Danta, bordering tributary of Río León, northeast of Bergantín, state of Anzoátegui, alt. 800-1100 m., February 22, 1945, *Steyermark 61109*, "tree 30 feet tall; leaves subcoriaceous to firmly membranaceous, deep green above, dull green below; fruit green, shining."

Local name: "candil."

Typical *M. guianensis* Kl. has the margins of the leaves entire or subentire. In forma *crenulata* the margins of most of the leaves are distinctly crenulate.

Maytenus parvifolia Steyermark, sp. nov.

Frutex 1.7-metralis; ramulis tennerrimis striatis glabris; foliis subcoriaceis subsessilibus in petiolum decurrentibus, subtus argenteo-viridibus cuneato-obovatis apice rotundatis vel late obtusis mucronatis basi cuneatis 12-27 mm. longis 6-11 mm. latis glabris, marginibus supra medium utroque 3-4-crenulatis, nervis lateralibus adscendentibus utroque 3-4 utrinque paullo prominulis; inflorescentiis axillaribus 1-2-floris; pedunculis fructiferis ca. 1.5 mm. longis glabris; pedicellis fructiferis 2 mm. longis glabris; calycis laciniis late ovatis obtusis glabris; capsulis depresso-hemisphaericis trigonis triloc̆ularibus 6-7 mm. latis; valvulis 4-5 mm. longis extus croceis intus atrosanguineis transverse rugulosis; seminibus solitariis elliptico-oblongis 5 mm. longis 2.5 mm. latis, arillo carnoso.

Type in herb. Chi. Nat. Hist. Mus., collected on dry slopes near timber line on trail between Piñango and Las Corales, state of Mérida, alt. 3333 m., March 30, 1944, *Julian A. Steyermark 55832*, "shrub 5 feet tall; fruit dull orange, globose; leaves silvery green below, deep green above, subcoriaceous."

This species is related to *M. confertus* (R. & P.) Reiss., from which it differs in leaf shape, crenulate margins, glabrity throughout, and smaller capsules with thinner valves.

Maytenus Pittieriana Steyermark, sp. nov.

Arbor 2-8-metralis; ramulis juvenilibus tegragonis vel subtetragonis dense puberulentibus; ramis vetustioribus cinerascentibus

FIGURE 66

Maytenus Pittieriana

Habit of flowering branch (X 1).

glabris demum glabris; petiolis supra canaliculatis 1.5-2.5 mm. longis glabris; laminis firme membranaceis vel subchartaceis ellipticis vel elliptico-lanceolatis apice obtuse acuminatis basi acutis in petiolum subdecurrentibus 3-7 cm. longis 1-2.5 cm. latis, marginibus crebre crenulatis, crenaturis utroque 25-30, glabris, costa media utrinque prominula, nervis lateralibus utroque 7-8 arcuato-adscendentibus; inflorescentiis axillaribus glomerulatis; floribus sub anthesi flavido- vel pallido-viridibus 2-8 per inflorescentiam, bracteis minutis late triangulari-ovatis glandulari-ciliatis vel erosis; pedicellis 3-4 mm. longis filiformibus glabris; calycis laciniis late suborbicularibus apice rotundatis 0.8-1 mm. longis 1 mm. latis glabris; petalis oblongo-obovoideis vel oblongo-ovalibus apice rotundatis 2-2.3 mm. longis 1.2-1.6 mm. latis glabris, marginibus obscure erosis; filamentis 0.3-1 mm. longis glabris; antheris late cordato-ovatis 0.5-0.7 mm. longis; disco carnoso 1.8-2 mm. diametro; ovario in disco immerso; stylo carnoso 0.2 mm. longo; ovario 2-loculare, ovulis geminatis; capsulis obovatis 10-13 mm. longis conspicue 3-4 mm. stipitatis flavidis vel flavido-rosaceis, in sicco purpureo-brunneis bivalvis; valvis 8-10 mm. longis 5-7 mm. latis; seminibus solitariis obovoideis 7.5-9 mm. longis 5 mm. latis, arillo carnoso albido (Fig. 66).

Type in herb. Chi. Nat. Hist. Mus., collected in thickets on slopes above La Guaira, Distrito Federal, alt. 750 m., December, 1939, *Llewelyn Williams 13650*, "shrub or small tree (2 m. high)."

The following collections, all from Venezuela, may be considered cotypes; along acequia, Ingomar, Distrito Federal, February, 1935, *H. Pittier 13562;* "a small deciduous tree; flowers green; stamens 5; fruit an ovoid red drupe;" en las faldas interiores de las colinas de Sosa, Distrito Federal, January, 1940, *F. Tamayo 1215*, "arbol de 8 m.;" in second growth forest and coffee plantations, Los Mariches, new road to Santa Lucia, state of Miranda, January 25, 1925, *Pittier 11664*, "tree 10-15 cm. diam., 6-8 m. high; flowers yellowish-green pentamerous; stamens alternate with sepals; disc large; fruit pyriform, yellow;" forested rocky slopes along Río Querecual, southwest of Bergantín, state of Anzoátegui, alt. 500 m., March 14, 1945, *Steyermark 61481*, "small tree 20 feet tall; leaves firmly membranaceous, deep green above, pale dull green below; fruit olive green turning yellow; flowers pale green;" en la selva de galeria de La Ceiba, Medio Paragua, state of Bolívar, alt. 70 m., March 19, 1940, *Llewelyn Williams 12656*, "arbol de 7 m. de altura, con copa angosta; el tronco es derecho, redondo, 15 cm. de diámetro; el fruto es axilar, dehiscente, de color amarillo rosado en su madurez y con arilo blanco."

This species is closely related to *M. tetragonus* Griseb. of the West Indies and to *M. evonymoides* Reiss. and *M. subalata* Reiss. From all of these it may be distinguished by the fruit which is conspicuously long stipitate, the stipitate portion 3-4 mm. long. In *M. tetragonus* the leaves are broader and of a different shape, and the young branchlets are glabrous, whereas in *M. Pittieriana* they are

densely puberulent.

This species includes material cited by Pittier *(Pittier 11664)* in his original description of *M. floribunda* (Notas Dendrol. Ven. 1: 2-3. 1937, in Bol. Soc. Ven. Cien. Nat. 3: 424-425. 1937), but Pittier did not draw up his description from any fruiting specimens. Inasmuch as the best character for separating this species from *M. tetragonus*, with which Pittier showed it had previously been confused, is in the stipitate fruit, a mature fruiting specimen has been selected as the type of a new species, commemorating the name of Dr. Pittier. The *M. floribunda* Pittier, unfortunately, is a later homonym of *M. floribunda* Reiss. (Mart. Fl. Bras. 11, Part 1: 16. pl. 4. fig. 3., and pl. 7. 1861.

STAPHYLEACEAE

Turpinia multijuga Steyermark, sp. nov.

Frutex 3.5-5 m. altus; ramulis purpurascentibus, novellis tomentellis; foliis petiolatis patentibus, cum petiolis 11-27 cm. longis; rhachidibus foliorum 9-21 cm. longis plus minusve hirtellis; petiolis 3-5 cm. longis plus minusve hirtellis vel glabratis; foliolis prominenter rugosis concoloribus plerumque 6-jugis, aliquando 3-jugis, subsessilibus oblongo-ellipticis 3.5-9.5 cm. longis 1.5-4.5 cm. latis, apice acutis vel subacuminatis, basi obtusis, costis secundariis utrinque 6-7 subtus prominentibus e margine 5-8 mm. anastomosantibus, supra sulcatis, supra glabris subtus costa media atque nerviis secundariis parce puberulis ceterum glabris; petiolulis 1-3 mm. longis hirtellis; floribus non visis; paniculis terminalibus ramosis pedunculatis, sub fructu 12-18 cm. longis; pedunculo 4-6 cm. longo tomentello; ramis ramulisque oppositis tomentellis vel subhirtellis; pedicellis fructiferis 5-7 mm. longis hirtellis; fructibus subhemisphaericis apice bicuspidatis glabris 8-10 mm. diam.

Type in herb. Chi. Nat. Hist. Mus., collected on Cuesta de Rincon and Cuesta del Barro, between Canaguá and La Quebrada, on road to El Molino, state of Mérida, alt. 1925-2175 m., May 10, 1944, *Julian A. Steyermark 56455*, "shrub 10-15 feet tall; fruit dull green, globulose-depressed; leaves patent-spreading, deep green and rugose above with sulcate nerves, dull green and rugose below with raised nerves; stem dull purplish."

This species differs from the common *T. heterophylla* (R. & P.) Harms & Loes. and from other known species in the combination of its mostly 6-paired subsessile or shortly petiolulate rugose leaflets, and tomentulose stems, petioles, petiolules, rachis of leaves and fruiting branches. From *T. venosa* Spruce of Ecuador it differs in the smaller subsessile leaflets with fewer lateral nerves and shorter and less abundant pubescence of leaflets.

ICACINACEAE

Emmotum ptarianum Steyermark, sp. nov.

Arbor 8-10-metralis; ramulis novellis cinereo-strigillosis vetustioribus glabris teretibus; petiolis supra canaliculatis 5-12 mm. longis

novellis parce vel dense cinereo-strigillosis vetustioribus glabrescentibus; laminis coriaceis ovatis vel ovato-ellipticis apice longe acute acuminatis, acumine 8-15 mm. longo, basi obtusis vel subacutis, 4.5-8.5 cm. longis 2-4 cm. latis, costa media supra plerumque parce strigillosa atque facie inferiori parce remote strigillosa ceterum glabris, novellis utrinque leviter strigillosis, costa media supra sulcata subtus prominente, nervis lateralibus utroque 5-9 arcuato-adscendentibus subtus duobus infimis prominulis, ceteris plerumque obsoletis; inflorescentia 7-flora, paniculis petiolis brevioribus vel longioribus 5-10 mm. longis cinereo-strigillosis; calyce campanulato, tubo 0.6-1 mm. longo extus cinereo-strigilloso, lobis ovato-lanceolatis subacutis vel obtusiusculis 1.5 mm. longis parce strigillosis ciliolatis; petalis lanceolatis subacutis vel obtusiusculis 4.5 mm. longis 1.2 mm. latis extus praecipue supra medium cano-sericeis ceterum secus costam parce sericeis, intus secus costam albido-hirsutulis; filamentis basin et apicem versus attenuatis carnosis 3 mm. longis 0.8 mm. latis glabris; antheris anguste oblongis 1 mm. longis; ovario late oblongo 2 mm. alto, 2-loculari dense albido-hirsutulo; loculis 2-ovulatis; stylo terminali 2.2 mm. longo glabro; fructu ignoto (Fig. 67).

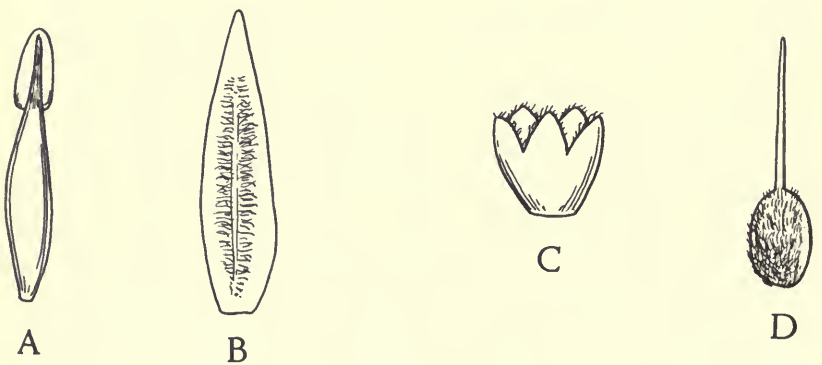


FIGURE 67

Emmotum ptarianum

A, Stamen, dorsal view (X 8); B, Petal, from within (X 8); C, Calyx (X 6); D, Pistil (X 8).

Type in herb. Chi. Nat. Hist. Mus., collected in vicinity of "Misia Kathy Camp," southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 59974*, "small tree 25-30 feet tall; leaves coriaceous, dull rich green above, paler dull green below; sepals pale dull green; outside of petals pale green, inside white with white hairs; style greenish-white."

Cotype in herb. Chi. Nat. Hist. Mus., collected in rich woods, vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and

Sororopán-tepuí, state of Bolívar, alt. 1615 m., November 15-17, 1944, *Steyermark 60294*, "tree 25 feet tall."

Local name: "epoca-po-yek."

In its 2-celled hirsute ovary, style longer than ovary, and calyx lobes pubescent at tips, this species manifests close affinity to *E. glabrum* Benth. ex Miers. It differs in its longer calyx, longer and broader petals, longer stamen and pistil, filament narrowed and tapering at base and apex and not broadest at base, outside of petals more conspicuously pubescent down the midrib, fewer-flowered and shorter inflorescences, and only the two lowest pairs of lateral nerves on the lower leaf surface prominent, the lowermost arching upwardly and continuing along the edge of the leaf-blade to half its length, whereas in *E. glabrum* there are 3-5 pairs of lateral nerves developed on the lower surface, but the lowermost are not prominent.

The new species is also related to *E. argenteum* Gleason of Mount Duida, from which it differs in the much longer style, the exterior of the petals pubescent down the midrib, the sparsely strigillose or glabrescent instead of densely pilose petiole, the different leaf shape with a different type of venation, and the cinereous strigillose young stems and glabrescent older ones instead of the densely tomentose stems of *E. argenteum*.

It is noteworthy of record that from each of the table mountains in Venezuela where *Emmotum* has been collected, an endemic species has been described (*E. argenteum* from Duida, *E. conjunctum* from Auyan-tepuí, *E. fulvum* from Roraima, and the present described *E. ptarianum* from Ptari-tepuí). Of these species only *E. fulvum* and *E. argenteum* have been found on a second table mountain, Steyermark having collected (no. 60671) *E. fulvum*, previously known only from Roraima, on Ptari-tepuí, and Maguire & Fanshawe having collected *E. argenteum* from the Kaieteur Plateau in British Guiana.

SAPINDACEAE

Cupania kavanayena Steyermark, sp. nov.

Arbor 8-13-metralis; ramulis rufo-tomentellis striatis; petiolis supra sulcatis 3-4 mm. longis tomentellis; foliolis 2 coriaceis vel subcoriaceis erectis obovatis apice truncato-emarginatis basi acutis vel subobtusis 3.5-6.8 cm. longis 1-3.5 cm. latis utrinque glandulis rufis sessilibus microscopicis obsitis vel glabrescentibus, subtus etiam pilis brevissimis adpressis pallidis instructis, marginibus integerrimis, nervis lateralibus utroque 5-6 adscendentibus ante marginem anastomosantibus utrinque prominulis; paniculis axillaribus sub fructu 4-6 cm. longis; bracteis minutis 1.5 mm. longis rufo-tomentosis; floribus ignotis; pedicellis fructiferis 3.5-5 mm. longis rufo-hirtellis; sepalis fructiferis late triangulari-ovatis acutis 2.5-3 mm. longis 1.5-1.75 mm. latis extus rufo-tomentellis; capsula rubro-purpurea turbinata triquetro-trilobata in stipitem attenuata 1.1-1.3 cm. longa extus fusco-tomentella, intus brunneo-hispidula, septis

superne latioribus; semine obovoideo vel ellipsoideo-obovoideo 7.5 mm. longo 6 mm. lato, arillo fere usque ad apicem obtecto, testa nigra.

Type in herb. Chi. Nat. Hist. Mus., collected in Quebrada de Kavanayén, between Santa Teresita de Kavanayén and airport, state of Bolívar, alt. 1200-1220 m., December 11, 1944, *Julian A. Steyermark 60912*, "tree 40 feet tall; leaves erect, coriaceous, deep green above, paler green below; fruit reddish purple."

Also collected in dense forest along Río Karuai bordering savanna between base of Ptari-tepuí and Sororopán-tepuí, state of Bolívar, alt. 1220 m., November 28, 1944, *Steyermark 60744*, "tree 25-30 feet tall; leaves erectish, subcoriaceous, deep green above, paler green below."

This new species is related to *C. diphylla* Vahl of the Guianas and Brazil in having 2-foliolate leaves, but differs in its much smaller, narrower, more coriaceous leaflets which are truncate-emarginate at apex, much shorter petioles and petiolules, the lower surface of the leaflets glabrate or minutely reddish glandular-dotted instead of hirtellous, the lower leaf surface not rugose nor prominently reticulate-veined between the lateral nerves, the midrib and lateral nerves glabrate or only sparsely pubescent, and in the tree instead of shrub habit.

From the two new species described below, it differs in the prominently raised lateral nerves of the lower surface of the leaflets, the differently shaped leaflets with their deeply emarginate apex, and in the large size of the tree.

Cupania kukenanica Steyermark, sp. nov.

Frutex 3.3-5-metralis; ramulis novellis hirtellis vetustioribus parce puberulis vel glabrescentibus; petiolis 5-9 mm. longis tomentellis; foliolis 2 subcoriaceo-chartaceis elliptico-oblongis vel obovato-oblongis apice rotundatis obtusis vel subemarginatis basi subobtusis 3.8-7.5 cm. longis 1.3-3.2 cm. latis, supra plerumque glabris subtus costa media parce vel dense adpresso-pubescente, ceterum plerumque glabris, marginibus integerrimis, nervis lateralibus utroque 6-7 arcuato-adscendentibus ante marginem anastomosantibus supra prominulis reticulatis subtus vix prominulis; paniculis axillaribus densifloris ad 4.3 cm. longis; pedicellis brevibus; floribus masculis: calyce profunde 5-fido vel ut videtur liberis, sepalis late ovato-triangularibus subacutis 2 mm. longis 1.5 mm. latis, extus dense puberulentibus, intus parce puberulentibus; petalis 2 mm. longis parte superiore 1.5 mm. latis rhomboideo- vel obovoideo-ellipticis acutis, in unguem contractis, marginibus pubescentibus, squamis duabus obcuneatis vel subinfundibuliformibus cum petalis plus minusve connatis petalis paullo brevioribus vel subaequilongis inflexis villosis; disco puberulente vel hirsutulo; staminibus 8, filamentis subfiliformibus 3.8 mm. longis dimidio inferiori pubescentibus; antheris suborbicularibus 0.6 mm. longis 0.6-0.7 mm. latis glabris (Fig. 68).

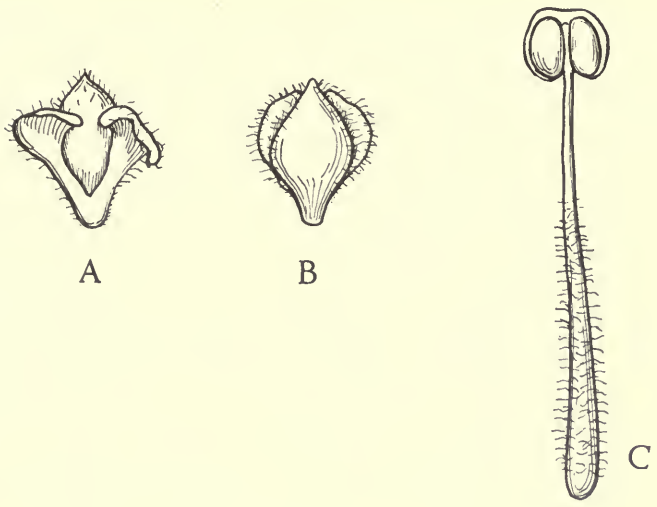


FIGURE 68

Cupania kukenanica

A, Petal, from within (X 10); B, Petal, from without (X 10); C, Stamen (X 5).

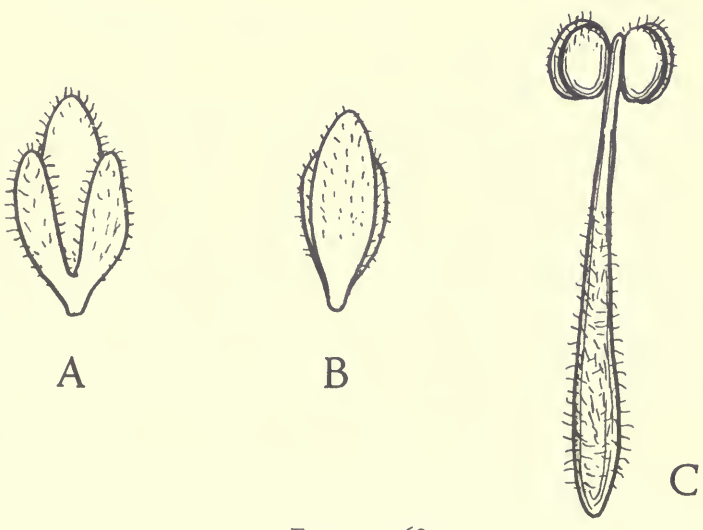


FIGURE 69

Cupania roraimae

A, Petal, from within (X 12); B, Petal, from without (X 12); C, Stamen (X 18).

Type in herb. Chi. Nat. Hist. Mus., collected above waterfall of Rué-merú along rocky stream banks, Gran Sabana, between Kun and waterfall at Rué-merú (tributary of Río Kukenán), south of Mount Roraima, state of Bolívar, alt. 1065 m., October 2, 1944, *Julian A. Steyermark 59182*, "shrub 10-15 feet tall; leaves subcoriaceous-chartaceous, deep green above, pale dull green below."

This species is closely related to the following one described below, in which the differences between the two are enumerated.

Cupania roraimae Steyermark, sp. nov.

Arbor 8-metralis; ramulis novellis hirtellis vetustioribus parce puberulis vel glabrescentibus; petiolis 7-13 mm. longis hirtellis; foliolis 2-4 subcoriaceis lanceolato-oblongis vel anguste oblongo-ellipticis apice rotundatis vel subacutis basin versus sensim angustatis subacutis 5-13 cm. longis 1.5-3.5 cm. latis, supra plerumque glabris subtus costa media parce vel dense adpresso-pubescente ceterum plerumque glabris, marginibus integerrimis, nervis lateralibus utroque 8-10 arcuato-adscendentibus ante marginem anastomosantibus utrinque prominulis reticulatis; paniculis axillaribus densifloris ad 3.5 cm. longis; pedicellis brevibus; floribus masculis: sepalis ut videtur liberis subimbricatis triangulari-ovatis subacutis 2-2.5 mm. longis 1.5 mm. latis extus dense pubescentibus; petalis 2.5 mm. longis parte superiore 1.5 mm. latis oblongo-ellipticis obtusis, in unguem contractis, dorso marginibusque pubescentibus, squamis duabus oblanceolatis obtusis cum petalis plus minusve connatis petalis brevioribus erectis inflexis villosis; disco supra pubescente; staminibus 8, filamentis 3 mm. longis supra basin dilatatis dimidio inferiori pubescentibus; antheris suborbicularibus 0.6 mm. longis 0.6-0.7 mm. latis parce puberulis (Fig. 69).

Type in herb. Chi. Nat. Hist. Mus., collected near Kun, in Gran Sabana, between Kun and Uaduara-parú, in valley of Río Kukenán, south of Mount Roraima, state of Bolívar, alt. 1065-1220 m., October 1, 1944, *Julian A. Steyermark 59107*, "tree 25 feet tall; leaves subcoriaceous, deep green above, dull green below; flowers gray-white."

Although strikingly similar to the species described above, *C. kukenanica*, and from the same general area, this species differs from *C. kukenanica* in the puberulous anthers, obtuse petals, narrowly oblong-elliptic, instead of subinfundibuliform or obcuneate auricles of the petals, lower part of filament enlarged above the base, 2-4 instead of 2 leaflets, and midrib of leaflets puberulous on lower surface.

Although it was at first believed that this and the preceding species *(C. kukenanica)* might more properly be aligned under *Matayba*, the apparently free or nearly free sepals would place them in *Cupania*. The three new species here described *(C. kavanayena, C. kukenanica*, and *C. roraimae)* are all closely related to one another.

Dipterodendron venezuelense Steyermark, sp. nov.

Arbor 16.5-metralis; ramulis novellis leviter puberulentibus; foliis

abrupte bipinnatis; petiolis 10-13 cm. longis puberulentibus; rhachidi 15-16 cm. longa puberulente supra bisulcata; pinnis 11-15 cm. longis utrinque 4 alternis, insterstitiis 3-5 cm. longis; foliolis pinnarum utrinque 7-8 oppositis vel alternis lanceolatis vel lanceolato-ellipticis apice subacutis vel obtusis apiculatis basi inaequaliter cuneatis in petiolulum ad 2 mm. longum contractis vel subsessilibus 2.3-4.5 cm. longis 0.6-1.5 cm. latis supra glabris costa media parce puberulis, subtus pilis minutissimis adpressis dense obsitis excepto, marginibus grosse serratis, serraturis utroque 8-12, nervis lateralibus utroque 15-25 fere angulo recto patentibus utrinque prominulis (Fig. 70).

Type in herb. Chi. Nat. Hist. Mus., collected in cañon between San Isidro Alto and Santa Cruz de Mora, state of Mérida, alt. 760-1800 m., May 15, 1944, *Julian A. Steyermark 56569*, "tree 50 feet tall; common; leaves rich green above, gray green below."

This is the first species of the genus *Dipterodendron* to be recorded from South America, the two previously described, *D. costaricense* Radlk. and *D. elegans* Radlk., having been found in Costa Rica and Panama. Although the type specimen, unfortunately, is sterile, there is no question about the generic status of the Venezuelan plant. It is separated from the other two species above mentioned by the somewhat larger and more coarsely toothed leaflets. From *D. elegans*, which it most closely resembles, it is separated moreover by having the hairs on the lower surface of the leaflets less dense and shorter, and by the apparent lack of glands.

Llagunoa venezuelana Steyermark, sp. nov.

Frutex 5-metralis; ramulis glabratis; petiolis 7-15 mm. longis hirtellis supra valde dense hirtellis; foliis simplicibus late ovatis vel elliptico-ovatis apice obtusis apiculatis basi rotundatis 4.8-9 cm. longis 3-6 cm. latis, supra parce fusco-glandulosis costa media dense villosulis ceterum glabris, subtus dense glandulosis praesertim costa atque nervis hirtellis, marginibus undulato-dentatis vel remote denticulatis, nervis lateralibus utroque 11-13 valde patentibus ante marginem furcatis prominulis; dichasiis 3-7-floris 2-4.5 cm. longis petiolos superantibus, pedunculis 1.3-2.1 cm. longis parce glandulosis; pedicellis 3-10 mm. longis dense glandulari-hirtellis; calyce utrinque glandulis obsito, lobis late ovatis subacutis 3-4 mm. longis prope basin 2.5-3 mm. latis; disco semiorbiculari-oblongo 8 mm. longo 4.5 mm. lato fere integerrimo vel paullo undulato-crenulato glabro; filamentis glabris; antheris late oblongis 1.3-1.5 mm. longis 1.1-1.2 mm. latis pilosulis; ovario adpresso-canescenti.

Type in herb. Chi. Nat. Hist. Mus., collected above El Molino, between El Molino and El Quebradón, state of Mérida, alt. 2010-2135 m., May 14, 1944, *Julian A. Steyermark 56507*, "shrub 15 feet tall; leaves deep green above, dull green below; flowers and disk deep green; filaments lavender."

The genus *Llagunoa* has not been recorded previously from Venezuela, the other two species having been known from Chile to

FIGURE 70
Dipterodendron venezuelense
Habit of leafy branch.

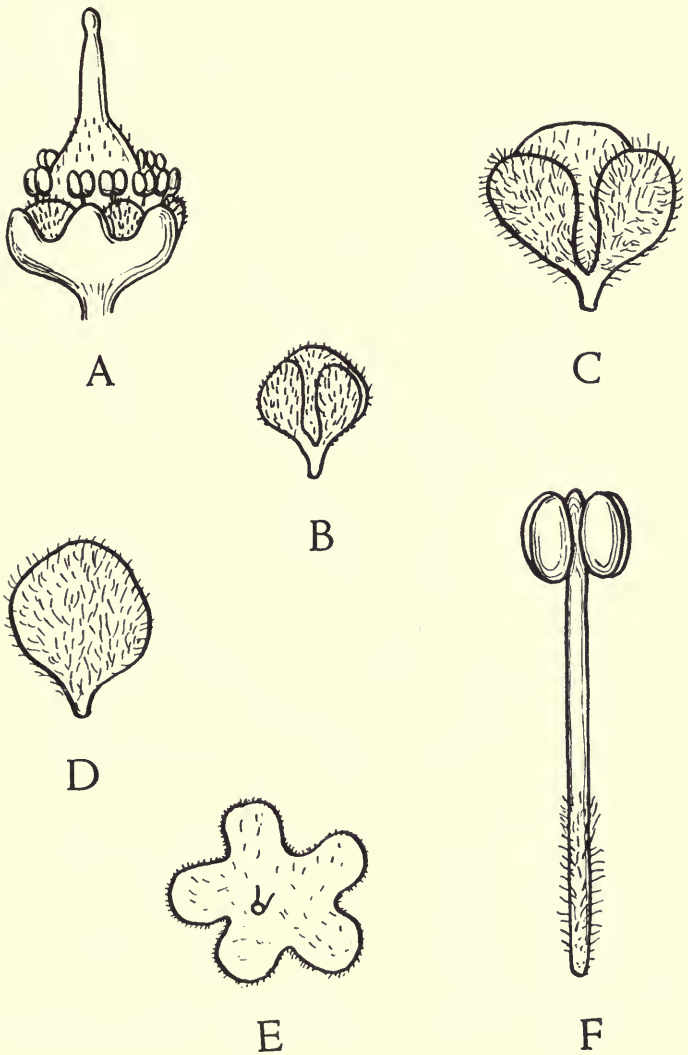


FIGURE 71

Matayba ptariana

A, Pistillate flower (X 8); B, Petal of pistillate flower, from within (X 9); C, Petal of staminate flower, from within (X 12); D, Petal of staminate flower, from without (X 12); E, Calyx spread open, staminate flower (X 4); F, Stamen, staminate flower (X 21.5).

Colombia. This new species is most closely related to *L. nitida* Ruiz & Pavon and var. *mollis* (Kunth, Radlk., from which it may be distinguished by the pilosulous anthers, glabrous, slightly larger disk, prominently glandular calyx lobes within and without, only slightly puberulous pericarp of the fruit, more prominently glandular lower leaf surface, and more remotely denticulate instead of closely crenate-serrate leaf margins.

Matayba ptariana Steyermark, sp. nov.

Frutex 2.8-6.8-metralis; ramulis teretibus glabris; foliis 2-foliatis, petiolatis, 4.5-13 cm. longis; petiolis 6-27 mm. longis glabris; foliolis coriaceis vel coriaceo-chartaceis supra atroviridibus lanceolato-ellipticis vel ovato-lanceolatis vel ellipticis apice acutis vel obtusis basin versus sensim angustatis acutis in petiolum 2-4 mm. longum decurrentibus 3.7-12 cm. longis 1.2-4.8 cm. latis, utrinque glabris, marginibus integerrimis, nervis lateralibus utroque 10-15 prominulis, utrinque valde reticulato-venosis, efoveolatis; paniculis 6-8.5 cm. longis, rhachidi parce adpresso-puberulente; pedicellis 2-3 mm. longis adpresso-pilosulis; floribus masculis: calyce 5-lobato, lobis late oblongis apice rotundatis 2 mm. longis 1.7-1.8 mm. latis, marginibus ciliatis ceterum glabris; petalis albis obovoideis vel obovoideo-suborbicularibus apice rotundatis 1.5-2 mm. longis 1.8-2 mm. latis utrinque dense pubescentibus, bisquamatis, squamis obovatis rotundatis petalis brevioribus villosis; staminibus 8, filamentis filiformibus 2.3-2.5 mm. longis dimidio parte inferiori puberulis; antheris suborbiculari-oblongis 0.5 mm. longis 0.5 mm. latis glabris vel ad margines excrescentibus paucis, disco glabro superne sublobato; rudimento ovarii puberulo; floribus foemineis: calycis lobis late oblongis apice rotundatis 1.5 mm. longis 1.2 mm. latis marginibus ciliatis ceterum glabris; petalis albidis suborbicularibus apice rotundatis 2 mm. longis 1.8 mm. latis utrinque dense pubescentibus; filamentis 1.8-2 mm. longis utrinque paullo angustatis ad basin usque 7/8 longitudinem pubescentibus; antheris suborbiculari-oblongis 0.5-0.7 mm. longis 0.7-0.8 mm. latis glabris; disco glabro; pistillo 3 mm. longo; stylo parce puberulo; ovario hirsutulo; capsula trigona obverse pyramidata 16-18 mm. longa in stipitem 8 mm. longam producta nitida glabra (Fig. 71).

Type (pistillate) in herb. Chi. Nat. Hist. Mus., collected at Salto de Iwaracarú-merú, at western end of Sororopán-tepuí, state of Bolívar, alt. 1015 m., November 15, 1944, *Julian A. Steyermark 60203*, "shrub 20 feet tall; leaves coriaceous-chartaceous, dark green above, dull green below; corolla whitish; calyx and rachis pale green."

Cotype collections, all from the state of Bolívar, in herb. Chi. Nat. Hist. Mus., are: (staminate) dry sandy and rocky sandstone exposures on level ground adjacent to swamp on plateau portion of southeast-facing slopes, Ptari-tepui, alt. 1600 m., November 1, 1944, *Steyermark 59687a*, "shrub 8-15 feet tall; leaves coriaceous, dark green above, dull green below; pedicels and sepals pale green; petals white;" (pistillate) same data as preceding, *Steyermark*

59687; (fruiting plant) scrubby woods, vicinity of "Misia Kathy Camp" on mesa between Ptari-tepuí and Sororopán-tepuí, alt. 1615 m., November 15-17, 1944, *Steyermark 60262,* "shrub 15 feet tall; fruit shining, grass green."

This species is related to *M. robusta* Radlk., from which it differs in the glabrous anthers, obtusely acute apex of the leaflets, the larger flowers (when fully developed), and the pistillate inflorescence (when fully developed) equaling or exceeding the length of the leaves.

Matayba reducta Steyermark, sp. nov.

Arbor 13-metralis; ramulis teretibus glabris; foliis abrupte pinnatis petiolatis, 12-19 cm. longis; petiolis 2.2-3.5 cm. longis glabris; foliolis 6-7 firme membranaceis alternis vel oppositis elliptico-oblongis vel elliptico-lanceolatis apice obtusis vel rotundatis basin versus angustatis acutis in petiolulum 5-8 mm. longum contractis 5.5-11.5 cm. longis 2-3.7 cm. latis, utrinque glabris, marginibus integerrimis, nervis lateralibus utroque 12-14 arcuato-adscendentibus prominulis, utrinque reticulato-venosis efoveolatis; inflorescentiis ad apices ramulorum confertis; paniculis axillaribus solitariis ramosis 15-20 cm. longis, ramulis 9-20 cm. longis, cymulis 1-7-floris breviter pedunculatis; rhachi inflorescentiae puberulenti; pedicellis 0.7-1.5 mm. longis densiuscule puberulis; floribus masculis: calyce 5-lobato, lobis suborbiculari-ovatis subacutis 1 mm. longis 1 mm. latis extus parce puberulentibus; petalis albis deltoideis obtusis 1.3 mm. longis 1.5-1.6 mm. latis, bisquamatis, squamis late spatulatis vel obovoideis apice rotundatis petala sesquiduplo superantibus villosis; staminibus 8, filamentis 2.5 mm. longis supra basin dilatatis parte tertia inferiore pubescente; antheris suborbiculari-oblongis 0.5-0.6 mm. longis 0.5-0.6 mm. latis glabris, marginibus exterioribus puberulentibus excepto; disco pubescente (Fig. 72).

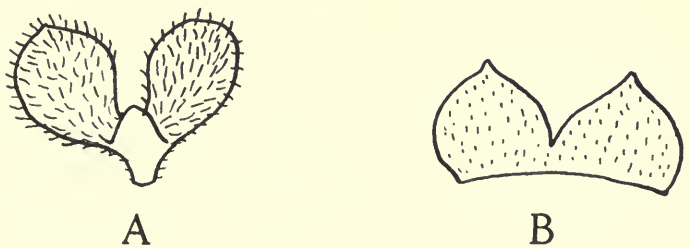


FIGURE 72

Matayba reducta Steyermark

A, Petal of staminate flower (X 1.9); B, portion of calyx, staminate flower (X 15).

Type (staminate) in herb. Chi. Nat. Hist. Mus., collected on wooded slopes of Quebrada O-paru-má, between Santa Teresita de Kavanayén and Río Pacairao (tributary of Río Mouak), state of

Bolívar, alt. 1065-1220 m., November 20-21, 1944, *Julian A. Steyermark 60365,* "tree 40 feet tall; leaves firmly membranaceous, deep green above, dull green below; flowers white (filaments, petals); calyx pale green."

This species is related to *M. fallax* Radlk. and to *M. opaca* Radlk., in having the auricles or scales of the petals exceeding the petals in length, but differs in these scales greatly exceeding (2-1/2 times longer than) the petals, the latter being reduced to very small appendages. The new species is also characterized by having a pubescent disk and subacute calyx lobes.

Matayba sororopaniana Steyermark, sp. nov.

Arbor 10-metralis; ramulis teretibus glabris; foliis abrupte pinnatis petiolatis, 21-25 cm. longis; petiolis 3.5-5.5 cm. longis glabris; foliolis 3-4 firme membranaceis oppositis vel suboppositis lanceolato- vel oblongo-ellipticis apice obtuse acuminatis basi cuneatis in petiolulum 2-3 mm. longum contractis 6.5-15.5 cm. longis 3-6 cm. latis utrinque glabris, marginibus integerrimis, nervis lateralibus utroque 6-9 patento-adscendentibus e margine 5-10 mm. anastomosantibus prominulis utrinque valde reticulato-venosis efoveolatis; paniculis axillaribus solitariis subsimplicibus 3.2-6 cm. longis, cymulis plerumque 1-floris; rhachi inflorescentiae parce adpresso-pilosula; pedicellis 1.5-1.75 mm. longis hirtellis; floribus masculis: calyce 5-lobato, lobis suborbicularibus rotundatis 1.2 mm. longis 1.5 mm. latis extus puberulentibus; petalis albis late suborbicularibus rotundatis 1.3 mm. longis 1.7-1.9 mm. latis utrinque dense pubescentibus, bisquamatis, squamis late spatulatis vel late obovoideis rotundatis, petalis paullo brevioribus utrinque villosis; filamentis 3 mm. longis ad basin usque 3/4 longitudinem pubescentibus; antheris suborbiculari-oblongis 0.5 mm. longis 0.5 mm. latis puberulis; disco glabro (Fig. 73).

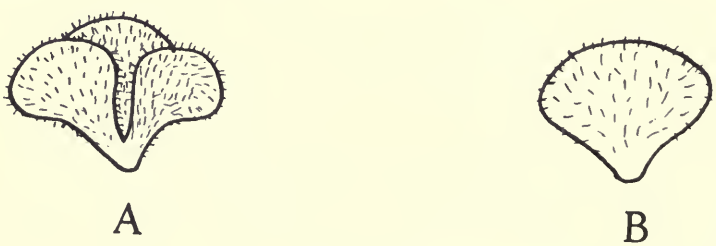


FIGURE 73

Matayba sororopaniana Steyermark

A, Petal of staminate flower, from within (X 15); B, Petal of staminate flower, from without (X 15).

Type (staminate) in herb. Chi. Nat. Hist. Mus., collected on wooded ridge between quebrada and waterfall (Salto de Iwaracarú-merú), Sororopán-tepuí, state of Bolívar, alt. 1656-1980 m., November 15, 1944, *Julian A. Steyermark 60201,* "tree 30 feet tall; leaves

firmly membranaceous, deep green above, dull green below; flowers sweet-scented, white; rachis pale green."

This species is closely related to *M. inelegans* (Spruce) Radlk., from which it differs in the rounded instead of acute calyx lobes, main part of petal rounded instead of acute or apiculate, more numerous and more widely spreading instead of ascending lateral nerves, which are less prominent on the lower surface of the leaflets.

Matayba venezuelana Steyermark, sp. nov.

Arbor 16.5-metralis; ramulis teretibus juvenilibus tomentellis; foliis abrupte pinnatis petiolatis, 27-32 et ultra longis; petiolis 9.5-11 cm. longis tomentellis; foliolis 6-8, alternis vel oppositis, elliptico-lanceolatis vel late lanceolatis apice obtusis basi acutis in petiolulum 6-9 mm. longum contractis, 11-16.5 cm. longis 2-5 cm. latis, utrinque glabris, marginibus integerrimis, nervis lateralibus utroque 15-17 patento-adscendentibus ante marginem anastomosantibus prominulis, utrinque valde reticulato-venosis pellucido-punctatis; inflorescentia ad apices ramulorum confertis; paniculis axillaribus solitariis ramosis 8.5-11.5 cm. longis; rhachi inflorescentiae tomentella; pedicellis 1-1.5 mm. longis dense adpresso-pilosulis; floribus foemineis: calyce profunde 5-lobato, tubo 0.2 mm. longo, lobis triangularibus subobtusis 1.5 mm. longis 1.5 mm. latis extus puberulis; petalis albidis suborbicularibus apiculatis 1.5 mm. longis 1.7 mm. latis longe unguiculatis, bisquamatis, squamis obcuneatis dense pubescentibus; disco puberulo vel subtomentoso; ovario 3-4-lobato 3-4-loculari 2 mm. longo adpresso-pubescente; stylo 1.5-2 mm. longo.

Type (pistillate) in herb. Chi. Nat. Hist. Mus., collected by first small ridge, lower south-facing slopes between Río Karuai and first ridge above Río Karuai, Ptari-tepuí, state of Bolívar, alt. 1220 m., November 28, 1944, *Julian A. Steyermark 60663*, "tree 50 feet tall; flowers whitish; leaves membranaceous-chartaceous, rich green above, pale green below."

Local name: "torón-yek."

This species is related to *M. arborescens* (Aubl.) Radlk., *M. macrolepis* Radlk., and *M. macrostylis* Radlk. It is characterized by the 6-8 subopposite pellucid-punctate leaflets, tomentose disk, 3-4-celled ovary, and style as long as or shorter than the ovary. From *M. arborescens* it is distinguished by the pubescent disk and style as long as or shorter than the ovary, while from *M. macrolepis* and *M. macrostylis* it is separated by the subopposite pellucid-punctate leaflets and the 3-4-celled ovary.

Paullinia mollicoma Steyermark, sp. nov.

Scandens fruticosa fulvo-tomentosa; ramis 5-costatis 4-5 mm. diametro; stipulis lineari-lanceolatis 7 mm. longis fulvo-tomentosis; foliis 5-foliolato-pinnatis petiolatis, 7-15 cm. longis; petiolis 1.2-5.5 cm. longis fulvo-tomentosis; foliolis subcoriaceis late ovatis vel elliptico-ovatis apice obtusis abrupte vel obtuse acuminatis basi obtusis vel acutis in petiolulum 1.5-4 mm. longum fulvo-tomentosum contractis, 4-9.5 cm. longis 2.5-5 cm. latis, supra plerumque glabris

praeter costam mediam hirtellam, subtus densiuscule fulvo-pilosis, marginibus remote obtuse denticulatis dentibus utroque 5-8-subtus foveolatis, nervis lateralibus utroque 6-9 adscendentibus ad margines terminantibus, utrinque valde creberrime reticulato-venosis; thyrsis solitariis foliis brevioribus spiciformibus pedunculatis sub fructu 6-8 cm. longis fulvo-tomentosis; pedunculis 1.3-2.5 cm. longis dense fulvo-tomentosis; pedicellis sub fructu 2-2.5 mm. longis dense fulvo-tomentosis; sepalis fructiferis extus dense tomentosis; capsula acute trigona pyriformi-turbinata deorsum 3-4-stipitata trialata 1.5-1.8 cm. longa (immatura) 8 mm. lata (alis exclusis) extus glabra, alis oblongo-lanceolatis apice rotundatis 5-7 mm. longis 2.5-5 mm. latis (immaturis) striatis glabris.

Type in herb. Chi. Nat. Hist. Mus., collected in lower portion of Quebrada O-paru-má, tributary of Río Pacairao, below Santa Teresita de Kavanayén, state of Bolívar, alt. 915-1065 m., November 25, 1944, *Julian A. Steyermark 60579*, "liana on tree; stems fulvous-tomentose; leaves subcoriaceous, deep green above, dull green below with yellow-brown nerves; rachis fulvous-brown."

Local name: "kun-a-wa-lu-yek."

This species, characterized by the conspicuous linear-lanceolate stipules and short inflorescences, is related to *P. rufescens* Richard, from which it differs in the much shorter inflorescence, more slenderly stipitate and narrower capsule, and soft spreading, longer hairs of the petioles, stems, rachis, and lower surface of the leaflets. From *P. livescens* Radlk. it is distinguished by the much shorter inflorescence and longer and more spreading hairs on the stems, petioles, rachis, and lower surface of the leaflets.

SABIACEAE

Meliosma Pittieriana Steyermark, sp. nov.

Arbor 13-metralis; ramulis novellis robustis dense rubescenti-tomentosis, ramis robustis tomentosis vel inferne glabrescentibus; foliis simplicibus abrupte petiolatis, petiolis 2-8 cm. longis 2.5-4 mm. crassis supra anguste sulcatis dense ferrugineo-tomentosis; laminis coriaceis supra atroviridibus late oblongis vel late obovato-oblongis apice rotundatis obtusis vel subacutis 12-35 cm. longis 6.5-18 cm. latis, marginibus integerrimis, supra secus costam mediam atque nervos laterales ferrugineo-tomentellis ceterum hirsutulis vel glabrescentibus subtus secus costam mediam atque nervos laterales et venulas dense ferrugineo-hirtellis ceterum ferrugineo-villosulis cum glandulis rubescentibus sessilibus munitis vel glabrescentibus, nervis lateralibus utroque 12-14 patento-adscendentibus subtus praecipue prominentibus, ante marginem anastomosantibus, subtus praecipue valde reticulato-venosis; paniculis axillaribus 28-33 cm. longis, rhachi et ramulis panicularum dense ferrugineo-tomentosis, ramulis fructiferis 4-9 cm. longis; floribus breviter pedicellatis vel subsessilibus; calyce fructifero 2.5-3 mm. lato, sepalis late suborbicularibus apice rotundatis 1 mm. longis 1-1.5 mm. latis marginibus valde ciliatis extus parce puberulis vel glabratis; drupa purpurea,

brunnea-viridi-areolata, in statu sicco obovoidea 2-2.5 cm. longa 1.5-2 cm. diametro; endocarpio brunnescente vel pallido-viridi; semine duro anguloso brunnescente.

Type in herb. Chi. Nat. Hist. Mus., collected in Quebrada Seca, between Fila Grande of Cerro Negro and Río Maravilla above Cerro Vaquero, northeast of Los Chorros and El Cielo, east of Bergantín, state of Anzoátegui, alt. 1000-1100 m., March 18, 1945, *Julian A. Steyermark 61524*, "tree 40 feet tall; leaves coriaceous, dark green above, dull green below; rachis and petioles ferruginous brown as are midrib and lateral nerves; fruit rich green turning blue."

Also collected near previous locality in mature fruit on ridge top, headwaters of Río Maravilla, slopes of Fila Grande, between Los Chorros and Cerro Negro, east of Bergantín, state of Anzoátegui, alt. 900-1400 m., March 23, 1945, *Steyermark 61728*.

This species is distinguished by the large obovate leaves rounded at tip, prominent, numerous, raised pairs of lateral nerves of the lower leaf surface, the rufescent dense tomentum of the midrib and lateral nerves of the lower leaf surface, the ferruginous-brown tomentose petioles and rachis, and the large open reticulate venation of the lower leaf surface.

This new species has much larger leaves than the recently described *M. meridensis* Lasser of Venezuela. It is related to *M. grandifolia* Urb. of Mexico, to *M. maxima* of Guatemala, and to *M. itatioiae* Urb. of Brazil. From the latter it differs, among other characters, in the entire leaf margins and the long-petiolate leaves, while from *M. Schlimii* Urb. of Colombia, to which it is also related, it differs in the more closely and densely pubescent lower surface of the leaves, the rounded instead of mucronate tip of the leaves, the non-decurrent petiole, the ferruginous-brown tomentose petioles and rachis, and the large open reticulation of veins on the lower leaf surface.

RHAMNACEAE

Colubrina venezuelensis Steyermark, sp. nov.

Arbor 3-6-metralis; ramis novellis cano-puberulis, vetustioribus glabrescentibus vel leviter cano-puberulis; foliis longe petiolatis, petiolis 9-12 mm. longis dense tomentosis, supra sulcatis; laminis ovatis apice caudato-acuminatis basi obtusis vel subobtusis 5-8.5 cm. longis 2-4 cm. latis, marginibus integerrimis utroque prope basin glandula praeditis, supra glabrescentibus praeter pilos secus costam mediam vel nervos secundarios subtus villosulis, nervis lateralibus utroque 6-8 subtus prominulis; inflorescentiis cymosis axillaribus, quam folia pluries brevioribus, 12-15-floris, pedunculo 3-4 mm. longo dense tomentello, prophyllis ovatis 0.7 mm. longis; pedicellis sub anthesi 4-5 mm. longis; floribus expansis 4.5-5 mm. diametro; alabastro depresso-sphaeroideo tomentello; calycis lobis late ovatis acutis 1.6 mm. longis, supra basin 1.2-1.5 mm. latis, extus tomentellis; petalis cucullatis obovatis apice rotundatis basi angustatis 1.3-1.5 mm. longis prope apicem 0.7-0.8 mm. latis; filamentis 1.5 mm.

longis; antheris suborbicularibus 0.3-0.4 mm. longis; disco plano subcrenato 2 mm. diametro; stylis 3, 1.5 mm. longis dimidio parte superiori liberis; ovario atque fructu juvenili glabro; fructu maturo non viso.

Type in herb. Chi. Nat. Hist. Mus., collected alrededores de Caracas, Distrito Federal, alt. 1600-1800 m., *Tomás González*.

Cotype in herb. Chi. Nat. Hist. Mus., collected on slopes forming almost pure stand, between Ojo de Agua and Peña de Mora, November 20, 1926, *H. Pittier 12248*.

This has been confused with *C. reclinata* (L'Hér) Brongn., from which it differs in the densely pubescent lower surface of the leaf-blades, in the pubescent petioles, young branches, longer, more acutely acuminate apices of the leaf-blades, and petioles averaging somewhat shorter.

VITACEAE

Cissus Trianae Planch., var. **Martiniana** (Woodson & Seibert) Steyermark, comb. nov.

Cissus Martiniana Woodson & Seibert, Ann. Mo. Bot. Gard. **24**: 191. 1937.

Study of *Cissus Trianae* Planch., represented in the herbarium of the Chicago Natural History Museum by a photograph of the type (El Arracachal, Andes of Bogotá, Colombia, *Triana* in herb. Genève), together with Venezuelan collections recently made in the Andes and the Cordillera de la Costa of Venezuela by Steyermark (numbers 55947, 61535, 62011, and 62325), have convinced the present author that *C. Martiniana* Woodson & Seibert, originally described from Panama, can at the most be retained only in varietal category. Both *C. Trianae* and *C. Martiniana* have the lower surface of the leaflets sparsely dotted with brownish appressed hairs which are attached in the center, or glabrate. Both species have small cuneate-obovate, repand-crenulate, or mucronulately crenate leaflets, which are subsessile and attenuate at base. The principal and apparently only difference between the two entities lies in the amount of ferruginous pubescence of the stipules, peduncles, and pedicels. This pubescence is much more pronounced and better developed in *C. Martiniana*. In *C. Trianae* the pedicels and peduncles are sparsely pilosulous or glabrate, and the stipules slightly more ferruginous-strigillose at the base, but often glabrate.

The apex of the leaves in flowering and fruiting specimens is usually rounded or obtuse, whereas in sterile material it is often acute or cuspidate-tipped or obtuse. This is evident both in *C. Trianae* as well as in *C. Martiniana*. The plant of Venezuela may trail over the ground or climb high into the trees. In Guatemala the plant is a ground-cover or ascends the trees, but is usually rather low, rather than high climbing.

ELAEOCARPACEAE

Sloanea breviseta Steyermark, sp. nov.

Arbor 25-metralis vel ultra; ramulis novellis tomentellis vetustioribus glabris gracilibus; stipulis caducis; foliis alternis vel suboppositis abrupte petiolatis, petiolis 1-4 cm. longis 0.75-1.5 mm. crassis supra sulcatis minute tomentellis; laminis chartaceo-firme membranaceis ovatis vel late ellipticis apice acutis vel cuspidatis basi rotundatis apice obtusis vel subacutis 5.7-15 cm. longis 3-7.5 cm. latis, marginibus repando-sinuatis vel subintegerrimis supra glabris subtus praecipue secundum costam mediam minute puberulis ceterum glabrescentibus, nervis lateralibus utroque 9-11 flavo-viridibus adscendentibus ante marginem anastomosantibus subtus praecipue prominentibus, venulis reticulatis; inflorescentia in axillis ramulorum; floribus ignotis; capsula ovoidea vel late oblonga apice rotundata basi rotundata 1-1.5 cm. longa 0.8-1 cm. lata dense tomentella et dense setosa, setis flavo-viridibus 2-4.5 mm. longis antrorse hispidulis.

Type in herb. Chi. Nat. Hist. Mus., collected in Montaña de Aguacate, along Quebrada de Pajarral, tributary to Rio Caripe, northeast of Alto de Aguacate, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 19, 1945, *Julian A. Steyermark 62215*, "tree 80 feet tall; leaves chartaceous-firmly membranaceous, deep green above, pale duller green below with yellow green nerves; fruit with yellow green appendages."

This species is distinguished by the caducous stipules, small capsule with short setae, long petioles, and thin, alternate, glabrate leaves which are acuminate at the tip and narrowed at the base.

It differs from *S. guianensis* Benth. in the shorter setae, and subrepand leaf margins, while from *S. monosperma* Vell. it is distinguished by the smaller fruit with shorter setae.

Sloanea caudata Steyermark, sp. nov.

Arbor 13-33-metralis; ramulis novellis dense ferrugineo-tomentosis vel glabrescentibus angulatis 5-8 mm. diam.; stipulis conspicuis persistentibus erectis lanceolatis acuminatis 15-30 mm. longis 2.5-4 mm. latis carinatis integerrimis extus dense tomentellis; foliis alternis abrupte longe petiolatis, petiolis 4.5-12 cm. longis 2-4 mm. crassis dense fulvo-tomentellis vel glabrescentibus; laminis magnis subcoriaceo-chartaceis ovatis vel oblongo-ovatis apice cuspidato-caudatis basi rotundatis vel subcordatis 24-45 cm. longis 10-19 cm. latis, marginibus irregulariter sinuato-crenatis vel repando-dentatis, supra glabris per sulcas costae mediae minute puberulis excepto, subtus per costam mediam atque nervos laterales puberulis ceterum plerumque glabris, nervis lateralibus utroque 12-21 adscendentibus subtus prominentibus ante marginem anastomosantibus, utrinque subtus praecipue reticulato-venosis; inflorescentiis axillaribus vel subterminalibus 6-7 cm. longis, pedunculis trichotomis dense fulvo-tomentellis; pedicellis 12-23 mm. longis dense fulvo-tomentellis; bracteis patentibus lanceolatis acutis vel acuminatis 8-10 mm. longis

integerrimis cano-tomentellis; floribus paucis; calyce 5-6-fido, segmentis paullo inaequalibus late lanceolatis vel ovatis acutis vel acuminatis 5-7 mm. longis 2.5-4 mm. latis utrinque dense tomentellis; staminibus numerosis liberis calycis segmenta superantibus, filamentis subulatis 1.5-2.2 mm. longis puberulentibus; antheris linearibus-ellipticis apiculatis 3-4.5 mm. longis, apicula 1.5 mm. longa; ovario 5-loculari dense hispidulo; stylis cohaerentibus 5-fidis 3-7.5 mm. longis superne glabris parte dimidia inferiori hispidulis; fructu ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected in lower portion of Quebrada O-paru-má, tributary of Río Pacairao, below Santa Teresita de Kavanayén, state of Bolívar, alt. 915-1065 m., November 25, 1944, *Julian A. Steyermark 60544* (3 sheets), "tree 40-100 feet tall; leaves subcoriaceous-chartaceous, rich green above, pale yellow green below; flowers fragrant; anthers buff-yellow; pedicel salmon; sepals salmon below, pale green near tip."

This species is a member of section *Eusloanea*, characterized by the lack of petals and densely setose capsule, but is distinguished from all other species by the long-petiolate, large, coarsely-toothed leaf blades with caudate apex, persistent entire tomentose stipules and bracts, deeply 5-6-parted calyx, and 5-celled ovary with 5-fid style. In aspect it resembles *S. amplifrons* Johnston, but that species has a cyathiform calyx and dentate stipules. The anthers are free and do not cohere in a mass as in *S. macrophylla* Spruce, another species which it superficially resembles.

Sloanea Onotillo Steyermark, sp. nov.

Arbor alta; ramulis novellis minute tomentellis vetustioribus glabrescentibus; stipulis lineari-lanceolatis acuminatis 10 mm. longis 1-2 mm. latis dense tomentellis integerrimis persistentibus vel caducis; foliis alternis abrupte petiolatis, petiolis 1.3-4.5 cm. longis 1.5-2.5 mm. latis dense fulvo-tomentellis; laminis subcoriaceis obovatis vel elliptico-obovatis apice rotundatis vel obtuse subacutis basin versus acute angustatis 9.5-18 cm. longis 5-10.5 cm. latis, marginibus repando-sinuatis, utrinque glabris vel glabratis supra per sulcas costae mediae saepe minute puberulentibus excepto, nervis lateralibus utroque 8-10 adscendentibus plerumque ad marginem excurrentibus subtus praecipue prominentibus; floribus ignotis; inflorescentiis axillaribus sub fructu 7-10 cm. longis; pedunculo sub fructu 4-4.5 cm. longo 2-2.5 mm. diametro dense tomentello; pedicellis sub fructu ca. 1 cm. longis; capsula suborbiculari quadrivalva 5-5.5 cm. longa 5-5.5 cm. diametro extus dense fulvo-tomentella valde echinata, echinis rigidis rectis persistentibus 1.5-2 cm. longis puberulentibus, valvis lignosis 5 mm. crassis intus glabris.

Type in herb. Chi. Nat. Hist. Mus., collected in woods along Río León by Quebrada Danta, tributary to Río Neverí, northeast of Bergantín, state of Anzoátegui, alt. 500 m., February 20, 1945, *Julian A. Steyermark 61016* (2 sheets), "fruit eaten by birds and mammals (lapa and acure); wood used for house construction, hard and durable; one of common trees in forest; leaves subcoriaceous, dull green above, paler dull green below."

Local name: "onotillo."

From *S. laxiflora* Spruce this species is distinguished by the more slender setae of the fruiting capsule, the 8-10 instead of 5-6 pairs of lateral nerves of the larger repand-sinuate margins of the leaves, which have a larger and more open network of veins on the lower surface of the leaf blades. It apparently is most closely related to *S. stipitata* Spruce and *S. multiflora* Karsten. From the latter it is easily distinguished by the shorter setae, the narrowed leaf base, and less repand-sinuate leaf margins, while from the former it may be separated by the larger fruit with longer setae, less coarsely toothed leaves with a larger network of veins on the lower surface. It also resembles *S. amplifrons* I.M. Johnston, but that has persistent serrate stipules and the setae of the fruit are softer, more slender, and curved.

The specific name refers to the local name employed for this tree by the inhabitants of the region.

Sloanea Onotillo, var. major Steyermark, var. nov.

A typo differt foliis majoribus, laminis 25-30 cm. longis 16-22 cm. latis utrinque rotundatis, capsulis majoribus 9 cm. longis 9 cm. diam., setis 3-3.5 cm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected in headwaters of Río Maraville, slopes of Fila Grande, between Los Chorros and Cerro Negro, east of Bergantín, state of Anzoátegui, alt. 900-1400 m., March 23, 1945, *Julian A. Steyermark 61726*, "this type with broad smoothish leaves common on ridge top and upper slopes; leaves subcoriaceous, deep green above, dull paler green below with raised yellow green midrib and nerves."

This variety differs in the larger fruit and larger leaf blades which are rounded at the base and summit.

Sloanea Pittieriana Steyermark, sp. nov.

Arbor 8-30-metralis; ramulis novellis tomentellis vetustioribus glabris gracilibus 2-6 mm. diam; stipulis caducis; foliis alternis vel oppositis petiolatis, petiolis 6-9 mm. longis plus minusve minute tomentellis vel glabrescentibus; laminis parvis chartaceo-subcoriaceis elliptico-oblongis vel oblongo-obovatis apice rotundatis vel obtusis basi acutis vel cuneatis 3-7 cm. longis 2-3.7 cm. latis, marginibus integerrimis, utrinque glaberrimis supra per sulcam costae mediae interdum minute puberulentibus, nerviis lateralibus utroque 6-8 adscendentibus ante marginem anastomosantibus subtus prominulis; inflorescentiis axillaribus vel terminalibus racemosis 1-2 cm. longis, paucifloris; pedunculis 2.5-6 mm. longis minute puberulentibus; pedicellis 4-8 mm. longis dense puberulentibus; bracteis ovatis vel lanceolato-ellipticis 1.5-5 mm. longis; sepalis 4 aequalibus vel subaequalibus oblongis vel ovato-oblongis obtusis vel subacutis 3.5-4.5 mm. longis 2.5-4 mm. latis integerrimis utrinque papillato-puberulentibus, marginibus pilis paullo longioribus munitis; petalis nullis; staminibus 15-27, filamentis 2.5 mm. longis pilosulis; antheris ovatis 1.2-1.5 mm. longis hirtellis; ovario quadriloculari 2 mm. alto

dense hispidulo; stylo 4-fido 2.5-2.8 mm. longo glabro; fructu ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected on steep wooded slopes just below dry ridge and shrubby zone, southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 59984*, "tree 80-90 feet tall, one of tall forest trees here; leaves coriaceous-chartaceous, dull green above, paler green below with yellow-green midrib; flowers fragrant; perianth dull brown-reddish without, pale dull green within; filaments pale yellow; anthers yellow."

Cotype in herb. Chi. Nat. Hist. Mus., collected in scrubby woods, vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and Sororopán-tepuí, state of Bolívar, alt. 1615 m., November 15-17, 1944, *Steyermark 60261*, "tree 25 feet tall; leaves chartaceous-subcoriaceous, dark green above, dull pale green below; sepals pale green; ovary pale green; filaments creamy green; anthers buff."

This species is related to *S. echinocarpa* Uitt. of French Guiana, but differs in the glabrous to finely puberulent instead of tomentose young twigs, 4- instead of 5-celled ovary, 4-fid styles, inflorescences shorter than or equalling the petioles, midnerve on upper leaf surface glabrous or at most minutely puberulent instead of villous, and veins on lower leaf surface glabrous or glabrate.

Sloanea ptariana Steyermark, sp. nov.

Arbor 20-metralis; ramulis novellis tomentellis vetustioribus glabris vel glabrescentibus gracilibus 2.5-6 mm. diametro; stipulis caducis; foliis alternis vel oppositis petiolatis, petiolis 4-13 mm. longis supra anguste sulcatis minute puberulentibus vel glabris; laminis firme membranaceis ovatis vel ovato- vel lanceolato-ellipticis apice cuspidato-caudatis vel acuminatis basi acutis vel obtusis 4-13 cm. longis 1.3-4.5 cm. latis, marginibus integerrimis, supra plerumque omnino glabris praeter interdum sulcam costae mediae minute parce puberulis, subtus plerumque glabris costa media interdum minute parce puberulis excepto, nervis lateralibus utroque 6-8 arcuato-adscendentibus ante marginem anastomosantibus subtus praecipue prominentibus, reticulato-venosis; inflorescentiis axillaribus racemosis 1-1,5 cm. longis; pedunculis 2-4 mm. longis minute hirtellis; pedicellis 3-4.5 mm. longis hirtellis; bracteis ovatis ca. 1 mm. longis puberulis; sepalis 4 aequalibus ovatis vel lanceolatis acuminatis 2.8-3.5 mm. longis 1-1.3 mm. latis integerrimis ad margines 1-2 glandulis verrucularibus munitis extus parce puberulentibus; petalis non visis; staminibus plerumque delapsis; filamentis gracilibus 3-3.5 mm. longis pubescentibus; antheris elliptico-oblongis obtusis 1 mm. longis pubescentibus; ovario quadriloculari 2.5-3 mm. alto ca. 2 mm. diametro dense fulvo-hispidulo pilis rigidis adscendentibus munitis, parce echinatis, echinis brevibus; ovulis in quoque loculo pluribus; stylo 4-fido 3-4 mm. longo glabro.

Type in herb. Chi. Nat. Hist. Mus., collected on lower south-facing slopes, between Río Karuai and first ridge above Rio Karuai, Ptari-tepuí, state of Bolívar, alt. 1220 m., November 28, 1944, *Julian A.*

Steyermark 60668 (2 sheets), "tree 60 feet tall; leaves firmly membranaceous, deep green above, dull green below; flowers dull yellow."

Local name: "woraumi-yek."

This species is distinguished by the small, mostly opposite, long acuminate leaves, which are prominently nerved on the lower surface, the short racemose axillary inflorescences, small flowers, 4-celled ovary, and 4-fid styles. It has the small leaves of *S. excelsa* Ducke, but differs from that species in its shorter petioles, shorter, wholly axillary inflorescences, and puberulent instead of glabrous rachis and peduncles. From *S. brachytepala* Ducke it differs in the smaller, thinner, long acuminate leaves with fewer lateral nerves on the lower surface, and shorter petioles, while from *S. ochrocarpa* Radlk. it differs in the smaller more numerous flowers. From the previously described *S. Pittieriana* this species may be distinguished by the thinner leaves with acuminate apex and rounded or acute base, more prominently reticulately veined on upper surface, smaller sepals, longer styles, and in the arboreal habit.

Sloanea venezuelana Steyermark, sp. nov.

Arbor 16.5-25-metralis vel ultra; ramulis novellis minute tomentellis plerumque glabrescentibus vetustioribus glabris 3-5 mm. diametro; stipulis caducis; foliis alternis vel oppositis petiolatis, petiolis 6-18 mm. longis glabris; laminis subcoriaceo-chartaceis late oblongis vel elliptico-oblongis vel oblongo-obovatis apice rotundatis basi acutis vel obtusis 4.5-10 cm. longis 2.3-5.5 cm. latis, marginibus integerrimis, utrinque glaberrimis, nervis lateralibus utroque 8-10 utrinque subtus praecipue prominentibus ante marginem anastomosantibus, valde creberrime densiter reticulato-venosis; floribus ignotis; pedicellis fructiferis 2-2.8 cm. longis minute puberulentibus vel glabris; capsula extus olivaceo-brunnea suborbiculari vel subovoidea quadrivalva 2.5-3 cm. longa 2-2.7 cm. diametro extus verruculosa dense tomentella, valvis lignosis 4-5 mm. crassis intus glabris; semine unico oblongo-ovoideo 15-17 mm. longo 10 mm. lato arillo carnoso cinnabarino vel rubro involto.

Type in herb. Chi. Nat. Hist. Mus., collected in Montaña de Aguacate, along quebrada de Pajarral, tributary to Río Caripe, northeast of Alto de Aguacate, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 19, 1945, *Julian A. Steyermark 62216*, "tree 80 feet tall with very hard wood; branches very brittle; leaves subcoriaceous-chartaceous, deep green above, dull green below; fruit bronze-brownish green without, with red aril over seed within."

Cotype in herb. Chi. Nat. Hist. Mus., collected along forested slopes of headwaters of tributaries of Río Neverí, between Río León and "Carmelita," northeast of Bergantín, state of Anzoátegui, alt. 800-1200 m., March 5, 1945, *Steyermark 61354*, "tree 50-80 feet tall; fruit edible; leaves chartaceous-firmly membranaceous, dull deep green above, dull green below with yellowish nerves; fruit turning brown when mature; fruit 1-seeded; seed surrounded by orange fleshy cover."

Local name: "palo duro; taque."

This species has one of the hardest woods encountered in the Oriente of Venezuela, but it is reported as not being used. It is a very common tree in the area. The fresh fruit when eaten is believed to cause a "loco" type of feeling. When ground and cooked it is prepared into a *tortilla* similar to that of *arepa de maiz*.

The new species is characterized by the glabrous young twigs, glabrous relatively short petioles, entire leaves rounded at apex, and the fruit covered by a close tomentum and lacking prickles. It is an additional member of the section designated by Pittier as *Lasiocarpus*, which would include the present species, *S. lasiocarpa* Pittier, *S. laurifolia* Benth., and *S. brachytepala* Ducke.

From *S. lasiocarpa* it differs in the smaller leaves narrowed at base and rounded at apex and in the much shorter petioles. From *S. brachytepala* it differs in the solitary fruiting peduncles, much shorter petioles, rounded tip of leaves, 8-10 instead of 10-18 pairs of lateral nerves, and glabrous young twigs and petioles.

MALVACEAE

Abutilon pseudogiganteum Steyermark, sp. nov.

Herba basi lignescens 3.3-metralis, ramis teretibus molliter tomentellis; foliis longe petiolatis, petiolis teretibus 2-12 cm. longis molliter tomentellis; laminis membranaceis ovatis subangulatis denticulatis apice longe cuspidatis vel acute acuminatis basi cordatis 6-20 cm. longis 5-14 cm. latis, supra cano-viridibus molliter minute stellatis subtus cano-viridibus dense stellato-tomentosis, 9-nerviis; inflorescentia paniculata; floribus apice ramulorum elongatorum agglomeratis breviter pedunculatis, pedunculis 5-23 mm. longis cano-tomentellis; calyce subcampanulato 10 mm. alto 12 mm. diam. ultra medium in lobos ovatos acuminatos 7.5-8 mm. longos 5 mm. latos extus dense cano-tomentellis intus tomentosis diviso, tubo basi quisque lobi cucullato-inflato tomentoso; petalis luteis reflexis suborbiculari-oblongis rotundatis 9 mm. longis 7 mm. latis, basi dense villosis; androeceo 1.1 cm. longo, tubo stamineo glabro 5-gono 8 mm. longo; antherae loculis divaricatis elliptico-oblongis obtusis 0.6-0.9 mm. longis 0.5 mm. latis, connectivo compresso carinato subreniformi utrinque rotundato 0.8-0.9 mm. longo 0.5 mm. alto; filamentis glabris liberis 4-5 mm. longis; stylis glabris 12 mm. longis; ovario depresso-globoso 3.5 mm. alto 4 mm. diam. tomentoso; carpidiis 14-16 maturis 10 mm. altis triovulatis extus tomentosis intus glabris apice subtruncatis angulatis; seminibus maturis 3 mm. longis villosis.

Type in herb. Chi. Nat. Hist. Mus., collected between San José and Cucutá, east of Bergantín, state of Anzoátegui, alt. 600-700 m., March 16, 1945, *Julian A. Steyermark 61519*, "subherbaceous, 10 feet tall; petals reflexed, dull yellow; filamentous base yellow green; filaments golden-yellow; leaves membranaceous, gray green above, pale grayish green below."

Two other collections which should be referred to this new species are *H. Pittier 13303*, collected on river banks, between Seca bridge and Motatán river, state of Trujillo, February 1, 1929, "shrub forming large intricate thickets, flowers yellow," and *H. Pittier 13100*, collected on shady river banks, road to El Tocuyo–Humocaro Bajo, state of Lara, January 6, 1929, "a low shrub; flowers light yellow to the core."

This species resembles *A. giganteum* (Jacq.) Sweet, but in that species the seeds are glabrous, the carpels are biaristate, and the petals are purple at the base.

Abutilon turumiquirense Steyermark, sp. nov.

Arbor 6.5-10-metralis; foliis longe petiolatis, petiolis teretibus supra canaliculatis 7-12 cm. longis stellato-tomentosis, laminis membranaceis late ovatis subangulatis minute denticulatis, utroque dentibus numerosissimis, apice longe cuspidatis vel acute acuminatis basi cordatis 15-23 cm. longis 11-18 cm. latis, supra leviter pilosis pilis simplicibus atque stellatis instructis, subtus canotomentellis pilis stellatis dense munitis, 9-nerviis; inflorescentia spicato-paniculata 18-25 cm. longa; floribus ignotis; pedunculis fructiferis usque ad 4-6 mm. longis vel fructibus sessilibus; carpidiis 9 maturis 8-9 mm. altis extus paullo tomentosis intus glabris apice subtruncatis; seminibus maturis 2.5 mm. longis villosis.

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Turumiquire, between La Trinidad and headwaters of Río de Amana, state of Sucre, alt. 1300-1800 m., May 10, 1945, *Julian A. Steyermark 62689*, "tree 20-30 feet tall; bark smooth, pale gray; leaves membranaceous, dull green above, gray below; fruit reputed edible."

Local name: "escoba."

This species is characterized by the arboreal habit, spicate-paniculate inflorescence with sessile or shortly stalked fruiting capsules of pubescent subtruncate carpels and villous seeds. The stellate hairs on the stems and capsules are relatively coarse and the pubescence on the upper surface of the leaves comprises relatively elongated simple and stellate hairs mixed with shorter stellate trichomes on the main nerves.

BOMBACACEAE[21]

Quararibea Steyermarkii Cuatr., sp. nov.

Arbor. Rami viridi-grisei cortice minute rugulosi, valde juveniles sparsis squamis stellatis muniti.

Folia simplicia alterna coriacea petiolata siccitate viridi-lutescentia pallida, infra pallidiora. Petiolus teres crassiusculus, 10-12 mm. longus, plus minusve lepidotus. Lamina ovato-elliptica vel obovato-elliptica, oblonga, basi obtusa vel subrotundata, apice abrupte acuminata, margine laevis, 11-21 cm. longa, 5.5-10 cm. lata;

[21] By José Cuatrecasas

supra viridis pilis stellatis subsquamosis sparsis munita, nervis medio lateralibusque paulo impressis, nervulis minute reticulatis paulo conspicuis; subtus pallido-viridis costa carinata elevata nervis secundariis prominentibus 5-7 utroque latere ascendentibus marginem versus arcuatis extremis anastomosatis vel evanenscentibus, axillis insertionis nervorum cum costa concrescentia callosa evoluta, nervis tertiis transversis remotis prominulis, venulis minus prominulis laxe

FIGURE 74

Quararibea Steyermarkii

Fruit with persistent calyx (X 3).

reticulatis, pilis squamosis stellatis sparsis munitis. Stipulae lineari-lanceolatae acutissimae crassiusculae, 8-10 mm. longae, deciduae.

Flores solitarii longe pedicellati oppositifolii. Pedicellus circa 20 mm. longus tener rigidus parce stellato-pilosus, parte media superiori sensim incrassatus, circa dimidiam partem tres bracteolas parvas 1-2 mm. longas ferens. Calyx conico-tubulosus coriaceus 10 mm. longus, 6 mm. diam. apice 3-4 breviter lobulatus, lobulis rotundatis inaequalibus, extus viridis squamis stellatis tectus, intus dense sericeus. Petala 5 late lineari-spathulata circa 22 mm. longa, 4 mm. alta, alba pubescentia basim versus longe unguiculato-angustata. Staminorum columna alba calycem excedens 15 mm. longa, striata pubescens, apicem versus sensim dilatata, apice 5 dentata dentibus obtusis crassiusculis, 1.5 mm. longis. Apice columnae extus loculi antherarum elliptici 1-1.5 mm. longi, valde congesti sed in duobus seriebus dispositi, superior quaterni cruciati in quoque dente, inferior bini dispositi, omni coronam 3 mm. altam formantes. Stylus linearis striolatus apice dilatatus, stamina paulo excedens. Capsula (praematuratione) anguste elliptico-oblonga subfussiformis apice longe angustata apiculata extremo mucronulato, extus dense stellato-squamulosa, circa 25 mm. longa, 6 mm. diam., apiculo 2 mm. lato, monosperma. Semen oblongum 20-22 mm. longum, 3-4 mm. latum (Fig. 74).

Type in herb. Chi. Nat. Hist. Mus., collected along Quebrada Colorado Grande, forested slopes of mountain on property of Juan Morocoima, southwest of Caripe, state of Monagas, alt. 850-1350 m., April 9, 1945, *Julian A. Steyermark 61959*, "flowers delicately fragrant, like perfume; all parts except calyx white; calyx dull green; leaves chartaceous-firmly membranaceous, rich green above, pale green below; note enlarged parts at axis of midrib and lateral nerves above and below."

The bark is used for tying purposes.

Local name: "carañа."

Quararibea Steyermarkii is a remarkable new species on account of its one-seeded fruit which is of a narrow elongated form simulating a bottle with a long neck but attenuate at the base. The leaves on the lower surface are characterized by a callose excrescence in the angles formed by the lateral nerves with the midnerve.

STERCULIACEAE

Melochia Humboldtiana Steyermark, sp. nov.

Herba annua erecta; caulibus simplicibus vel parce ramosis 1.5-4.5 dm. altis supra medium hirsutis superne pilis glanduliferis munitis; foliis breviter petiolatis, petiolis 3-9 mm. longis hirsutis, laminis ovatis apice acutis vel acuminatis basi rotundatis vel obtusis 1-3 cm. longis 1-1.6 cm. latis crebro serratis supra secus costam mediam adpresso-pilosis atque in lineas strumoso-adpresso-pilosis munitis ceterum glabris, subtus secus costam mediam atque plerumque nervos laterales adpresso-pilosis ceterum plerumque glabris,

nervis secundariis utroque 9-10 rectis adscendentibus ad margines exeuntibus supra sulcatis subtus prominentibus; paniculis terminalibus laxe ramosis, ramis nudis gracilibus strictis hirsutis atque pilis glanduliferis munitis, pedicellis 3-4 mm. longis glandulosi-pilosis; floribus parvis luteis; calyce 5-fido, laciniis ovato-lanceolatis longe acuminatis 2.2 mm. longis, tubo 1.8 mm. longo parce hispidulo; petalis obovatis apiculatis vel subito acutis basi stipitatis 6.5 mm. longis supra medium 2.2 mm. latis; tubo stamineo 2.2 mm. longo glabro; antheris 0.8 mm. longis late oblongis; ovario ad apicem pilis brevibus adpressis vel erectis hispidulis ceterum glabris; capsula matura subgloboso-turbinato basi stipitato 4.5-5 mm. alto 4-4.5 mm. lato ad apicem parce hispidulo praecipue angulis ceterum glabro granulis paucis sessilibus excepto; seminibus trigonis ca. 1.5 mm. longis striatulatis.

Type in herb. Chi. Nat. Hist. Mus., collected on rocky open limestone slopes, between Cocollar and Guamal, state of Sucre, alt. 1200 m., May 1, 1945, *Julian A. Steyermark 62436*, "petals rich yellow."

Yellow-flowered species of *Melochia* are comparatively rare. This species is most closely related to *M. kerriaefolia* Tr. & Pl., originally described from Colombia, but differs from that species principally in the mature fruits, which instead of being hirsute or hispidulous throughout are hispidulous only at the summit, and, except for some sessile granular excrescences over the surface, are glabrous. The calyx in *M. Humboldtiana* is less pubescent, while the peduncles and pedicels appear to be more abundantly glandular-pilose than in *M. kerriaefolia*.

This species commemorates the name of the famous explorer who passed through the same general route as was traversed by the present author.

DILLENIACEAE

Doliocarpus esmeraldae Steyermark, sp. nov.

Scandens, ramulis teretibus 5 mm. diametro dense molliter fulvo-tomentosis; foliis coriaceis obovatis apice subito acute acuminatis basi acutis in petiolum decurrentibus, 7-10 cm. longis 4-6.5 cm. latis plerumque dimidio superiore repando-sinuatis supra secus costam nervosque puberulis, subtus dense molliter tomentosis, nervis lateralibus utroque 10-11 fere rectis supra canaliculato-impressis subtus prominentibus, venis utrinque oblique lineolato-reticulatis; petiolis 9-12 mm. longis supra canaliculatis dense molliter pilosis; floribus axillaribus fasciculatis 15-20; pedicellis gracillimis puberulis 10-16 mm. longis; sepalis suborbiculari-oblongis vel oblongis, apice rotundatis concavis 4-5 mm. longis 2.5-3.5 mm. latis intus glabris extus puberulis; petalis ignotis; staminibus sepalis longioribus, filamentis 4.5-5 mm. longis glabris apice in connectivum dilatatis; antherarum loculis 0.5-0.6 mm. longis; ovario subhemispherico 2.8-3 mm. diametro glabro, stylo glabro; fructu ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected between Sabana Grande and southeastern base of Cerro Duida, Territorio Federal

Amazonas, alt. 200 m., August 23, 1944, *Julian A. Steyermark 57879*, "sprawling vine; leaves coriaceous, dark green above, dull green below; flowers greenish-yellow; fruit dull rose with green."

Other collections examined, all from or near the type locality, are swampy ground, Grand Savanna, Esmeralda, *Tate 282;* and at Middle Camp, Esmeralda, *Tate 346*.

This species is well marked by the densely soft tomentum of the stems and lower surface of the leaves.

By Sprague and Williams the Tate collections were named as *Doliocarpus densiflorus* (Bull. Torr. Bot. Club 58: 388. 1931), an unpublished name which the aforesaid authors believed to represent a collection typified by a Spruce collection from Tarapoto, Peru. This name, standing as such since 1931, and not considered published by these authors (loc. cit.), may be considered only as a *nomen nudum*. However, it is based on the collection of *Spruce 4567*, from Tarapoto, Peru, treated by Eichler in Martius's Flora Brasiliensis 13, part 1: 82. 1863, as variety β *densiflorus* of *D. brevipedicellatus* Garcke. As var. *densiflorus* the plant has already been properly published. As a specific epithet in a new category the proper combination may be made here:

Doliocarpus densiflorus (Eichler) Steyermark, comb. nov.

D. brevipedicellatus Garcke var. β *densiflorus* Eichler, in Mart. Fl. Bras. 13, part 1: 82. 1863.

D. densiflorus Sprague & Williams ex Gleason, Bull. Torr. Bot. Club 58: 388. 1931, name only treated as unpublished, and without bibliographical citation.

The Spruce collection from Tarapoto, Peru, which Sprague & Williams thought the same as the Tate collections from Venezuela, is amply distinct from the new species here considered. The sepals in the Spruce collection are shorter and narrower, the stems, petioles, and lower surface of the blades are not softly tomentose as in *D. esmeraldae*, and the pedicels are shorter with longer hairs.

Doliocarpus ptariensis Steyermark, sp. nov.

Scandens, ramulis novellis parce adpresso-pubescentibus vetustioribus glabris subteretibus; foliis subcoriaceo-chartaceis ellipticooblongis vel late oblongis vel fere oblanceolatis apice subito subacutis vel acuminatis vel obtusis basi obtusis vel acutis in petiolum decurrentibus, 8.5-15 cm. longis 2-7 cm. latis, subintegris vel prope apicem obscure denticulatis, supra secus costam saepe parce pilosis ceterum glabris, subtus secus costam nervosque adpresso-pilosis ceterum glabris, nervis lateralibus utroque 9-13 paullo arcuatoadscendentibus vel fere rectis subtus prominulis, utrinque venis arcte conspicue reticulatis; petiolis 5-15 mm. longis supra canaliculatis supra plerumque dense tomentosis, subtus adpresso-pilosis vel glabrescentibus; floribus axillaribus fasciculatis fere sessilibus, pedicellis 1-1.5 mm. longis tomentellis; sepalis suborbicularibus apice rotundatis 4-6 mm. longis 4.5-5.5 mm. latis intus glabris extus

dense puberulis; petalis albis obovatis apice rotundatis 8 mm. longis 5-6 mm. latis; staminibus sepalis longioribus; filamentis 6-8 mm. longis glabris apice in connectivum dilatatis; antherarum loculis 0.6-0.7 mm. longis; ovario suborbiculari hirsuto, stylo dense pubescente; fructu globoso 7 mm. diametro dense hirtello.

Type in herb. Chi. Nat. Hist. Mus., collected in vicinity of "Misia Kathy" camp, southeast-facing slopes, Ptari-tepuí, state of Bolivar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 59972*, "woody vine; sepals dull rose without, pale dull green within; petals white; filaments white; leaves subcoriaceous-chartaceous, dark green above, dull pale green below, midrib purplish-brown."

Fruiting material of this species was collected on steep wooded slopes just below dry ridge and shrubby growth, southeast-facing slopes, Ptari-tepuí, alt. 1585-1600 m., November 10-11, 1944, *Steyermark 59983*. This fruiting collection, taken within a short distance of the type locality, has the leaves more oblanceolate and somewhat more abruptly acuminate at the apex than in the type, but in all other particulars is the same.

The species is well marked by the almost sessile flowers, leaf shape, finely reticulate venation on both sides of the leaf-blades, especially above, and by the densely tomentose ovary and fruit. It is closely related to *D. savannarum* Sandwith and *D. virgatus* Sagot. From the former it differs in the densely tomentose ovary and fruit, in the conspicuously fine reticulation on both surfaces of the leaves, in the larger petals, broader sepals, and longer filaments. From *D. virgatus* it is distinguished principally by having the lower part of the leaf blades glabrous except for the appressed-pilose midrib and lateral nerves rather than tomentose throughout, and by having both sides of the leaf blades conspicuously finely reticulate.

Like these species and *D. paraënsis* Sleumer, this is a member of Subgen. *Calinea*, Sect. *Eudoliocarpus* Gilg.

Saurauia meridensis Steyermark, sp. nov.

Frutex 3 m. altus, ramis dense setis longis patentibus rufescentibus setoso-hirsutis; foliis firme membranaceis elliptico-obovatis vel late oblanceolatis apice subito longe acuminatis basi acutis vel subacutis 15-21 cm. longis 7.5-10 cm. latis, inaequaliter setuloso denticulatis, dentibus salientibus, supra rugosis, venis arcte reticulatis, sat dense setis ferrugineis basi bulbosis setoso-hirsutis, subtus pallido-viridibus dense setis longis rufescentibus molliter villosis, nervis lateralibus utroque 15-22 patento-adscendentibus, subtus costa media dense pilis longis patentibus villosis; petiolis ca. 1.7 mm. longis dense setis longis patentibus rufescentibus setoso-hirsutis; inflorescentia laterali longipedunculata; pedunculo 8 cm. longo dense setis longis patentibus rufescentibus setoso-hirsutis; thyrsis laxe paniculatis 10.5 cm. longis 10-12 cm. latis paucifloris, rhachi ramis pedicellisque dense pilis rufescentibus setoso-hirsutis; pedicellis 11-13 mm. longis; sepalis ovato-oblongis obtusis 7-8 mm. longis 3-4 mm. latis extimis duobus undique dorso

dense pilis longis patentibus rufescentibus basi bulbosis obtectis, aliis tribus linea dorsali pilis longis patentibus obtectis ceterum albido-tomentosis intus tomentellis; petalis oblongis apice obtusis 5-6 mm. longis 3-4 mm. latis; staminibus ca. 35 basi pilis intermixtis; ovario glabro.

Type in herb. Chi. Nat. Hist. Mus., collected in woods along canyon of Río Canaguá, near Canaguá, between Mucuchachí and Canaguá, state of Mérida, alt. 1065-1820 m., May 6, 1944, *Julian A. Steyermark 56344*, "shrub 10 feet tall; petals full white; leaves firmly membranaceous, dull olive green and rugose above, pale green below; midrib below brownish at base; hairs brick red or rufous-buff."

Local name: "guaco morado."

It is reported that this species is used in treatment of snake bite. Also an infusion of the leaves from the plant is taken internally by inhabitants of the region for malaria.

This species differs from other known South American species in the dense, long, rufous hairs which cover all parts of the leaves, stems, inflorescence, and calyx. It somewhat resembles *S. Lehmanii* Hieron. of Ecuador, but in that species the leaves, especially below, are not densely pubescent as in the new species. In some respects this species approaches *S. cuchumatanensis* Standl. & Steyerm. of Guatemala, from which it differs in the leaves being broadest above the middle and in the denser pubescence on the lower surface of the leaves.

Some of the flowers of the type collection show abnormalities of the androecium and other portions.

OCHNACEAE

Ouratea duidae Steyermark, sp. nov.

Frutex 1.3-metralis; ramulis glabris; foliis coriaceis petiolatis, petiolis 3-4.5 mm. longis crassis transverse rugosis; laminis ovatis vel ellipticis apice acutis basi rotundatis vel obtusis 5.5-9.5 cm. longis 1.7-4.1 cm. latis utrinque glabris, costa media subtus minute puberula excepto, marginibus crebro repando-crenulatis, nervis lateralibus arcuato-adscendentibus utrinque cum venulis tenuissimis prominulis; paniculis terminalibus paucifloris 1.5-2.3 cm. longis, rhachi papilloso-puberula; pedicellis 6-9 mm. longis glabris; sepalis ligulato-oblongis apice rotundatis carinatis 7 mm. longis 2-2.5 mm. latis glabris; gynophoro 0.5 mm. longo; stylo 5-5.5 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected on summit of Cerro Duiad, Savana Hills, Territorio Federal Amazonas, alt. 1025-1200 m., September 2, 1944, *Julian A. Steyermark 58284*, "shrub 4 feet tall; leaves coriaceous, deep dull green above, dull green below; petals yellow."

This species is related to *O. caracasana* (Planch.) Engl., from which it is distinguished by the short inflorescences, few small flowers, and more strongly nerved leaves.

Ouratea Grosourdyi (Van Tiegh.) Steyerm., comb. nov.

Cercouratea Grosourdyi Van Tiegh. in Ann. Sci. Nat. Par., ser. 8, XVI: 278. 1902; *Ouratea praecox* Sleumer, Notiz. 13: 352. 1936.

A comparison of isotype material *(H. Pittier 12369)* of *Ouratea praecox* Sleumer with a fragment and photograph of the type of *Cercouratea Grosourdyi,* preserved in the herb. Chi. Nat. Hist. Mus., shows that the two species are conspecific. Recently collected Venezuelan material *(Steyermark 62854* and *62877* from the state of Sucre, and *Steyermark 61755* from the state of Monagas) may be referred to this species.

Ouratea ptaritepuiensis Steyermark, sp. nov.

Frutex 1.7-2.7 m. altus; ramulis crassis dense foliosis; foliis coriaceo-chartaceis petiolatis, petiolis crassis transverse rugosis 2.5-6 mm. longis glabris; laminis ovalibus apice rotundatis vel subemarginatis basi rotundatis vel subcordatis 2.7-5 cm. longis 2-2.8 cm. latis margine praeter partem inferiorem integerrimam obsolete crenulato, costa media utrinque prominente, nervis lateralibus arcuato-adscendentibus cum venulis numerosis subtus prominulis, glabris; paniculis terminalibus 4.5 cm. longis, ramulis patento-adscendentibus eis rhachique glabris; pedicellis 6-9 mm. longis glabris; sepalis oblongis vel ovato-oblongis obtusis 6 mm. longis 3-3.5 mm. latis carinatis glabris; petalis obovato-oblongis vel oblongo-spatulatis apice rotundatis 6.5-7.5 mm. longis 4-4.5 mm. latis; antheris subulatis 6 mm. longis rugulosis; gynophoro 5-sulcato 0.9-1 mm. longo; fructu ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected in swamp on open level portion of plateau on southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1600 m., November 1, 1944, *Julian A. Steyermark 59642,* "shrub 5-8 feet tall; perianth deep yellow within, rich green without; pedicels grass green; leaves coriaceous-chartaceous, dark green above, dull paler green below."

This species is related to *O. roraimae* Engl., of which it may represent only a variety, but differs in its smaller leaf-blades, shorter petioles, smaller and shorter inflorescences, and smaller petals. It is related also to *O. mazaruniensis* A. C. Sm. & Dwyer, from which it differs in the crenulations of the leaf margins not developed in the lower half, the less prominent, more numerous secondary nerves of the lower leaf surface, denser shorter inflorescence, thicker pedicels and peduncles, smaller leaf blades, longer petioles, and secondary nerves fading out before reaching the margin.

Ouratea venezuelensis Steyermark, sp. nov.

Arbor 6-10-metralis; ramulis glabris foliosis; foliis coriaceis petiolatis, petiolis 4-8 mm. longis crassis transverse-rugulosis; laminis anguste vel late oblongis vel lanceolato-ellipticis apice plerumque rotundatis vel obtusis interdum subacutis basi plerumque rotundatis vel obtusis interdum subacutis 4-11 cm. longis 1.5-4.3 cm. latis, marginibus integerrimis, costa media utrinque valde prominente, nervis lateralibus arcuato-adscendentibus tenuissimis obscuris,

glabris; paniculis terminalibus folia superantibus, ramulis 5-10 cm. longis adscendentibus glabris; pedicellis 5-8 mm. longis glabris; sepalis cucullatis ovato-oblongis obtusis 8.5-8.75 mm. longis 3.5-4 mm. latis glabris; petalis oblongo-obovatis vel obovato-spatulatis apice rotundatis 9.5-10 mm. longis 5.5-6.5 mm. latis; antheris subulatis 6.5-7 mm. longis transverse valde rugulosis; gynophoro 5-sulcato 8-9 mm. longo; stylo 7.5 mm. longo; drupis oblongis 12-13 mm. longis 7 mm. diametro.

Type in herb. Chi. Nat. Hist. Mus., collected en las márgenes arboreadas del Caño Temi, Yavita, Territorio Federal Amazonas, alt. 128 m., February 2, 1942, *Llewelyn Williams 14152*, "arbol de 6-8 m. de altura con ramas alargadas, arcuadas; tronco corto, 40 cm. de diámetro; corteza de color castaño y el liber rojizo."

Other collections preserved in herb. Chi. Nat. Hist. Mus., all from Territorio Federal Amazonas, are, en las márgenes arboreadas del Caño Temi, Yavita, alt. 128 m., January 30, 1942, *Williams 14093*, "arbol de 8 m. de altura; corona de forma irregular; tronco erecto en la parte basal, 15 cm. en adelante de diámetro, sin ramas por unos 3 m.; corteza gris o castaño, aspera, el liber rojizo; madera de color claro o rosado; fr. verde; fls. amarillas, en panículas terminales; el pedúnculo es rojizo;" Victorino, Upper Guainía, alt. 127 m., 1942, *Williams 14812;* en terreno rocoso en los abiertos a lo largo de una isla periodicamente anegada, Maroa, Río Guainía, alt. 127 m., February 14, 1942, *Williams 14357*, "arbol de 8 m. de altura con copa algo frondosa; el tronco es encorvado, no redondo, 15 cm. de diámetro; la inflorescencia terminal; el fruto verde claro y el pedúnculo colorado; la corteza gris, áspera, y el liber colorado; la albura blánquecina y el duramen rosado;" acuático, y en las márgenes pobladas, periodicamente, Caño San Miguel, Río Guainía, alt. 127 m., March 23, 1942, *Williams 14851*, "arbol de 10 m., con copa irregular; tronco derecho ó torcido, hasta de 30 cm. de diámetro, muy ramificado; el fruto blando, cambiando a obscuro o casi negro en su madurez."

Local name: "ají de paloma."

The last two collections cited *(Williams 14357* and *14851)* have much narrower leaves which may be subacute at the base in contrast to the type and other collections *(Williams 14093, 14812)* in which the leaves are broader and more rounded at the base. However, since considerable variation in width and shape of leaves as well as degree of acuteness of leaf blade may vary on the same leaf branch (see *Williams 14812*), it does not seem justifiable to create leaf forms based on such variations.

This new species is related to *O. rigida* Engl. and *O. rotundifolia* Engl., but has much longer petioles than encountered in those species. The leaves are entire, as in *O. rigida*, not serrate as are those of *O. rotundifolia*.

Poecilandra pumila Steyermark, sp. nov.

Frutex 0.8-1 m. altus; ramulis gracilibus, ad apices dense foliosis; foliis subsessilibus, petiolis 0.5-2 mm. longis glabris; laminis

coriaceis oblanceolatis vel spatulatis apice rotundatis vel obtusis vel emarginatis basi cuneatis 2-4.5 cm. longis 0.8-1.5 cm. latis, glabris praeter margines glandulari-ciliatos, ciliis ad 0.5 mm. longis, laminis vetustioribus saepe glaberrimis, subintegerrimis, costa subtus valde prominente, nervis lateralibus cum venis adscendentibus numerosissimis; stipulis oblique lanceolatis apice acutis 2.5-3 mm. longis 1 mm. latis glabris, marginibus fimbriatulis, caducis; paniculis terminalibus laxifloris bracteatis ad 15 cm. longis; bracteis inferioribus oblongo-lanceolatis apice obtusis vel acutis 7-17 mm. longis 2.5-5 mm. latis, marginibus valde glandulari-setulosis, setulis ad 0.75 mm. longos attingentibus, caeterum glabris; pedicellis 7-17 mm. longis glabris; sepalis inaequalibus glabris eciliatis, duobus exterioribus late oblongis apice rotundatis 4.5 mm. longis 3.5 mm. latis, duobus intimis elliptico-ovatis apice obtusis vel acutis 8-8.5 mm. longis 5-6 mm. latis, quinto late oblongo apice rotundato 7 mm. longo 4.5-5 mm. lato; petalis obovatis apice rotundatis prope marginem paullo erosis 14 mm. longis 8 mm. latis; staminodiis exterioribus ca. 25 quam interioribus brevioribus apice spatulatis inferne filiformibus 5 mm. longis; staminodiis interioribus ca. 25 inaequalibus elongatis curvatis filiformibus staminibus aequantibus vel brevioribus 8-10 mm. longis; staminibus 5, filamentis deflexis sursum dilatatis 3 mm. longis; antheris anguste oblongis obtusis 4 mm. longis 0.8-0.9 mm. latis; stylo subulato 5 mm. longo; ovario elliptico-oblongo 2 mm. longo, uniloculari; placentis tribus 8 ovulos ferendis; capsula coriacea fusiformi-elliptica apice longe cuspidata 2.3-2.7 cm. longis 6-7 mm. diametro; seminibus alatis fulvis 4.5 mm. longis 2 mm. latis (Fig. 75).

Type in herb. Chi. Nat. Hist. Mus., collected in sandy wet meadow, Gran Sabana, on large mesa, between Mission of Santa Teresita de Kavanayén to Río Karuai, state of Bolívar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark 59342*, "shrub 2-3 feet tall; flowers yellow as are filaments; leaves coriaceous, dull green both sides."

Cotype in herb. Chi. Nat. Hist. Mus., collected in savanna, vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and Sororopán-tepuí, state of Bolívar, alt. 1615 m., November 15-17, 1944, *Steyermark 60235*, "shrub 2-3 feet tall; petals yellow; pedicels pale green to brick-salmon."

This species is at once distinguished from all the other known species of the genus by the dwarf habit and small leaves.

Sauvagesia duidae Steyermark, sp. nov.

Suffrutex 1-metralis; ramulis caulibusque glabris 2-5 mm. diametro; caulibus superne dense foliosis; foliis in petiolum decurrentibus, petiolis 3-7 mm. longis; laminis subcoriaceis anguste ellipticis vel lanceolato-ellipticis utrinque acuminatis apice setuloso-cuspidatis, 3.5-5.5 cm. longis 0.8-1.2 cm. latis glabris, marginibus adpresso-serrulatis praeter basin, serraturis 2-3 mm. distantibus, costa media subtus prominente, nervis lateralibus principalibus 10-11, cum venis numerosissimis, omnibus valde adscendentibus, setis ad apicem foliorum 2-2.5 mm. longis; stipulis lineari-subulatis 7-8 mm. longis

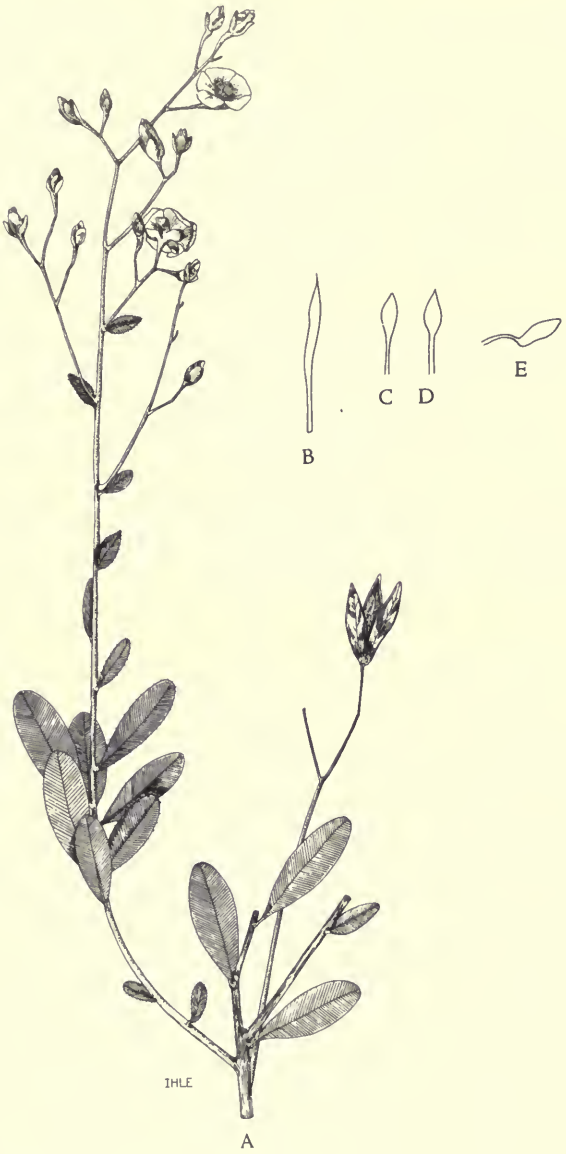


FIGURE 75

Poecilandra pumila

A, Habit of flowering branch (X 2.5); B, Inner staminodium (X 2.2); C–D, Outer staminodia (X 2½); E, deflexed filament (X 4).

prominente longe ciliatis, ciliis gracilibus 5-8 mm. longis basi ramulosis; floribus axillaribus, solitariis vel 2-3 per bostrychem, pedicellis 14-16 mm. longis glabris; sepalis subaequalibus lanceolatis acuminatis ad apicem glandulari-ciliatis, 6.8-7.2 mm. longis, ciliis ad 1 mm. longis; petalis albis obovatis apice obtusis basi subito substipitatis 6.5 mm. longis 4.2 mm. latis; coronae exterioris segmentis spatulatis 2-3-seriatis 2.5 mm. longis, segmentis coronae interioris oblongo-lanceolatis subobtusis 4.5 mm. longis 1.2 mm. latis; antheris breve stipitatis 2.2 mm. longis; filamentis 0.5 mm. longis; stylis subulatis ovario longioribus glabris 2.8-3 mm. longis sub fructu 3.5 mm. longis; ovario ovoideo 2 mm. longo; fructu ignoto (Fig. 76).

Type in herb. Chi. Nat. Hist. Mus., collected on southeastern-facing sandstone bluffs hanging over moist bluffs, near Caño Negro (tributary of Caño Iguapo), Territorio Federal Amazonas, alt. 1400 m., August 26, 1944, *Julian A. Steyermark 58021*, "petals white; shrubby, 3 feet tall with sprangling stems; leaves subcoriaceous, grass green above, paler green below; bracts buff-brown."

This unusual suffruticose species is related to *S. grandifolia* Dwyer of Brazil, from which it differs in the smaller sepals, shorter anthers, broadly spatulate outer coronal segments, firmer leaves with more conspicuous callous margins, with the marginal teeth longer and more pointed.

Sauvagesia longipes Steyermark, sp. nov.

Herba pusilla ad 5 cm. alta; caule simplice dense foliosa; foliis confertis in petiolum decurrentibus, petiolis ad 2 mm. longis; laminis firme membranaceis subtus lavendulis anguste oblanceolatis vel oblanceolato-spatulatis apice subacutis basi cuneatim angustatis 8-20 mm. longis 2.5-5 mm. latis glabris, marginibus crebro serrulato-crenulatis, crenulis glandulosis marginatis apice revolutis utroque 8-10, costa media prominenti, nervis atque venis numerosissimis, omnibus adscendentibus plus minusve parallelibus; stipulis linearisubulatis 3-5 mm. longis prominente longe ciliatis, ciliis 4-4.5 mm. longis; floribus terminalibus vel subterminalibus solitariis vel 2-5 aggregatis, pedicellis elongatis 13-20 mm. longis glabris; sepalis ovato-lanceolatis apice acuminatis, 3.8-4.5 mm. longis basi 1.5 mm. longis, 10-striatis, ad apicem longe 3-5-ciliatis, cilia apicali 0.5-0.6 mm. longa, ad margines prope basin sepalorum exteriorum utroque glandulis 3, sepalorum interiorium nullis; petalis roseis vel albis oblanceolatis acutis 3.5 mm. longis 1-1.1 mm. latis 7-nervatis, nerviis plus minusve parallelibus; coronae exterioris segmentis numerosissimis linearibus vel subulatis, appendice spatulata acuta, 1.5-1.8 mm. longis; coronae interioris segmentis 5 unguiculatis spatulatis 2.5 mm. longis, lamina elliptico-oblonga obtusa 1.5 mm. longa 0.7 mm. lata, ungue 1 mm. longo; antheris 4-locularibus apice prominentibus, late oblongis vel ovoideo-oblongis 0.7 mm. longis 0.4-0.5 mm. latis; filamentis 1-1.1 mm. longis; stigmati subdiscoideo vel subcapitato in medio depresso; stylo subulato 1.5 mm. longo;

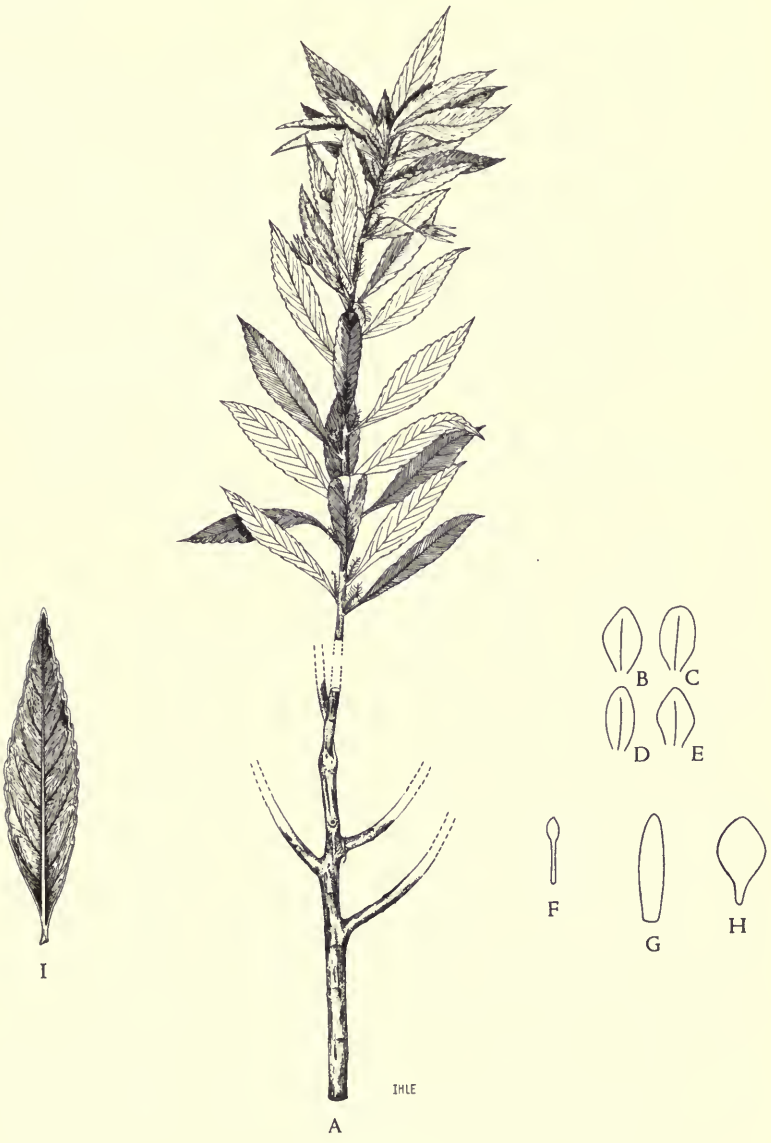


FIGURE 76

Sauvagesia duidae

A, Habit of flowering branch (X ½); B–E, Outer coronal segments (X 3.5); F, Outer coronal segment (X 3.5); G, Inner coronal segment (X 3.25); H, Petal (X 1.9); I, Leaf (X 1).

ovario ovoideo 0.9 mm. longo; ovulis ca. 20; seminibus castaneis 20-22 ovoideis apiculatis 0.5 mm. longis grosse prominente reticulato-alveolatis (Fig. 77).

Type in herb. Chi. Nat. Hist. Mus., collected in crevices of bluff along waterfall, Salto de Iwaracarú-merú, at western end of Sororopán-tepuí, state of Bolívar, alt. 1615 m., November 15, 1944, *Julian A. Steyermark 60215*, "petals pink to white; leaves deep green above, pale green to lavender below."

This species is distinguished by its spatulate inner coronal segments with distinct claw, filamentose outer coronal segments, elongate peduncles, long cilia at tip of sepals, ovoid apiculate seeds, subcapitate stigma, oblanceolate acute petals, and the habit of closely crowded oblanceolate, closely revolutely toothed leaves with 1-5 flowers at the tip of stem. The species is most closely related to *S. linearifolia* St. Hil. and *S. pulchella* Seem.

This species may best be treated as constituting a new section.

Sauvagesia Sect. **Spatulatae** Steyermark, sectio nova

Coronae interioris segmenta unguiculata. Stigma subdiscoidea vel subcapitata.

Type species, *Sauvagesia longipes* Steyermark.

Sauvagesia miniata Steyermark, sp. nov.

Herba pusilla 4.5-14 cm. alta; caule erecto simplice vel ramoso foliosa; foliis in petiolum subito decurrentibus petiolis 1-1.5 mm. longis; laminis membranaceis anguste vel late ellipticis vel elliptico-oblanceolatis utrinque acutis vel acuminatis 6-13 mm. longis 2-5 mm. latis glabris, calloso-marginatis glanduloso-serrulatis praeter prope basin, serraturis utroque 6-8, costa media prominenti, nervis lateralibus principalibus 7-8 adscendentibus; stipulis lineari-setaceis 2.5-3 mm. longis longe ciliatis, ciliis 1-1.5 mm. longis; floribus e summis axillis 1-4 per bostrychem, pedicellis 4-8 mm. longis glabris; sepalis ellipticis 2.1-2.3 mm. longis acuminatis apice ciliatis, cilia 0.5 mm. longa; petalis oblongis, apice rotundatis 1.6 mm. longis; coronae exterioris segmentis ut videtur ca. 5 fere nullis subulatis 0.2 mm. longis vel tantum appendicibus linearibus minutis; coronae interioris segmentis 5, oblongis obtusis 1.2 mm. longis 0.3 mm. latis; antheris elliptico-oblongis 0.5 mm. longis; filamentis 0.5 mm. longis; stylo 0.3 mm. longo; ovario subgloboso 0.4 mm. longo (Fig. 78).

Type in herb. Chi. Nat. Hist. Mus., collected in vicinity of Sanariapo, near Río Sanariapo, tributary of Orinoco river, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Julian A. Steyermark 58467*, "stems erect; petals lilac."

Also collected in shade of boulders, Esmeralda Ridge, between Esmeralda and base of Cerro Duida, Territorio Federal Amazonas, alt. 150 m., August 21, 1944, *Steyermark 57730*.

This species resembles *S. pulchella* Seem. in its tiny sepals and petals, but the stipules are not glandular-jointed. The sepals and petals are much smaller than those of *S. tenella* Lam.

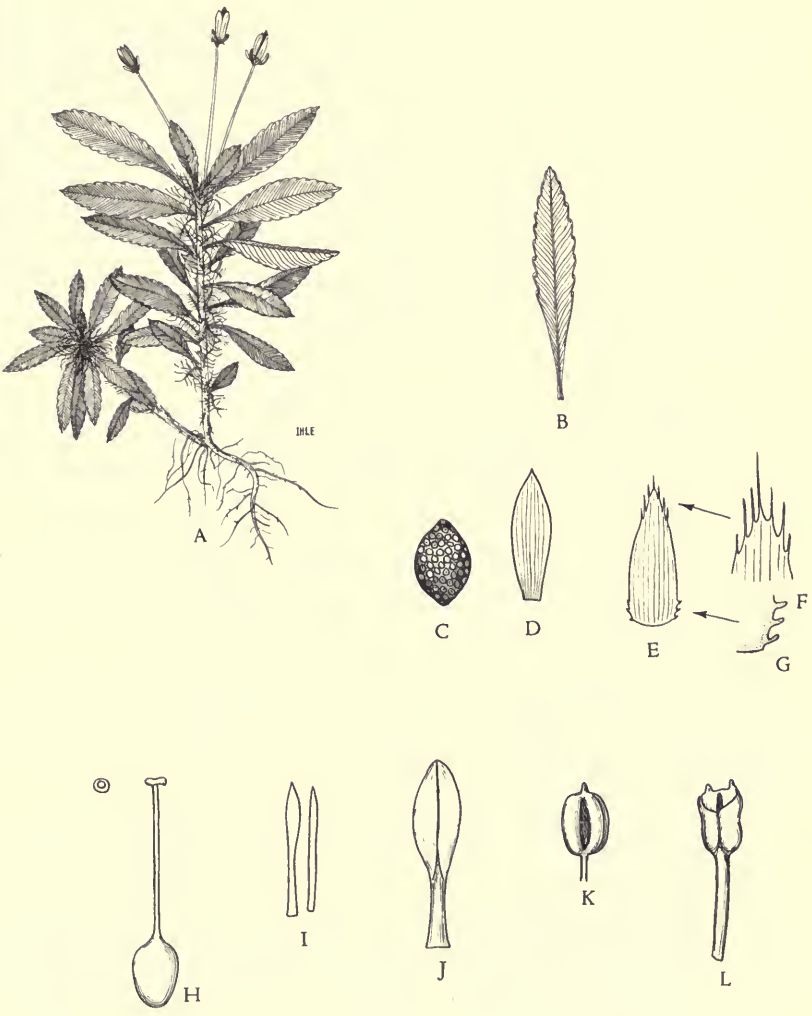


FIGURE 77

Sauvagesia longipes

A, Habit of plant (X 1); B, Leaf (X 1.5); C, Seed (X 25); D, Petal (X 5.4); E, Sepal (X 5); F, Apex of sepal (more highly magnified than E); G, Base of one margin of sepal (more highly magnified than E); H, Pistil (X 12.5); I, Outer coronal segments (X 11); J, Inner coronal segment (X 11); K, Anther with portion of attached filament (X 14); L, Stamen (X 14).

MARCGRAVIACEAE

Marcgravia sororopaniana Steyermark, sp. nov.

Caules procumbentes; foliis coriaceis subsessilibus vel breviter petiolatis, petiolis 3 mm. longis 3 mm. crassis; laminis oblongo-oblanceolatis vel lanceolato-oblongis apice acutis basi obtusis 5.5-8 cm. longis 2.3-3 cm. latis glabris, marginibus integerrimis vel subintegerrimis glandulis depressis munitis, subtus epunctatis, costa media prominenti, nervis secundariis utroque paullo evanidis; racemis terminalibus umbelliformibus ca. 14-floris brevipedunculatis, pedunculis 1.8 cm. longis; pedicellis florium fertilium tuberculato-verruculosis 2-2.2 cm. longis; bracteis tubuloso-cucullatis superne clavatis 4-4.3 cm. longis; sepalis florium fertilium orbicularibus apice rotundatis 3-4 mm. longis 5.5-6 mm. latis; petalis 7 mm. longis; staminibus 11-15; antheris 3 mm. longis; filamentis applanatis linearibus 2-3 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on Sororopán-tepuí, along wooded streamlet on crest of cerro between east and west end, state of Bolívar, alt. 2255 m., November 14, 1944, *Julian A. Steyermark 60127*, "stems descending and procumbent; leaves coriaceous, deep green above, paler green below; flowers dull green with ruddy brick on parts."

This species is characterized by having the tubular sterile bracts longer than the pedicels of the fertile flowers, the crowded flowers, the 11-15 stamens, and the subsessile, coriaceous, short-pointed leaves, which are epunctate on the lower surface.

It differs from *M. purpurea* I. W. Bailey in the shorter petioles, narrower and shorter-pointed, coriaceous leaf blades, shorter and less numerous pedicels, and short-pedunculate racemes. From *M. Wittmackiana* Gilg it differs in having 11-15 instead of 21-23 stamens, and in the much shorter petioles.

Souroubea guianensis Aubl., var. **tomentella** Steyermark, var. nov.

A typo differt rhachi dense ferrugineo-tomentella atque pedicellis minute puberulentibus.

Type in herb. Chi. Nat. Hist. Mus., collected in dense forest at base of cerro along Rio Karuai, Ptari-tepuí, state of Bolívar, alt. 1220 m., November 27, 1944, *Julian A. Steyermark 60652*, "liana; leaves coriaceous, dark green above, dull green below; spur and corolla red; other parts green and yellow."

Also collected in wooded quebrada along outer margin, Gran Sabana, between Kun and waterfall at Rué-merú (tributary of Río Kukenán), south of Mount Roraima, state of Bolívar, alt. 1065 m., October 2, 1944, *Steyermark 59153*, "vining, sprawling over shrubs; leaves coriaceous, deep green; petals reflexed, dark red, rest of flower dull green with yellow, fragrant."

Local name: "pirboi-yek."

In this portion of Venezuela the flexible and easily bent stems of this variety are used by the local inhabitants as frames for their

FIGURE 78

Sauvagesia miniata

A, Habit of plant (X 1); B, Leaf (X 1.5); C, Pistil (X 15); D, One of the inner coronal segments with two stamens and an outer staminodium (X 11.25); E, Sepal (X 7.25); F, Outer staminodium (X 2.25); G, Petal (X 6.25).

"guarares" (a sort of woven reed basket carried on the back and supported by strips of tough bark placed around the forehead). Healing properties are believed to be present in the bark which is boiled in water and then placed on cuts and open wounds.

THEACEAE[22]

Freziera Steyermarkii Kobuski, sp. nov.

Arbor 15-25 m. alta, cortice fulvo levi, ramulis teretibus atro-rubris, apice adpresso-puberulentibus. Folia firme membranacea, ovata, 10-15 cm. longa, 4-5 cm. lata, apice acuminata, basi subrotundata vel obtusa, distincte inaequalia, supra glabra basi costae excepta, subtus venis costaque adpresso-pubescentia, margine denticulata, costa supra canaliculata subtus elevata, venis 12-15 paribus subtus prominentibus, petiolis 1-1.5 cm. longis undique pubescentibus. Flores axillares, 5-7-fasciculati; pedicellis 4-5 mm. longis, adpresso-pubescentibus; bracteolis 2, apice pedicellorum positis, oppositis, suborbicularibus, subaequalibus, concavis, ca. 2 mm. longis latisque, leviter adpresso-pubescentibus; sepalis 5, imbricatis, subaequalibus, subrotundatis, exterioribus duobus crassis, concavis, ca. 2.75 mm. longis et 3 mm. latis (in fructu ca. 5 mm. longis), fulvo-sericeis, interioribus tribus tenuioribus, subconcavis, densiore fulvo-sericeis, margine submembranaceis; petalis 5, imbricatis, obovatis, albidulis, basi medioque subcrassis, 5-5.5 mm. longis, ca. 3 mm. latis; staminodiis (in floribus pistillatis) paucis, 0.65-0.70 mm. longis; ovario (♀ fl.) glabro, conico, ca. 3 mm. longo et 2 mm. diametro, ad apicem attenuato, 3-loculato, loculis multi-ovulatis; stigmatibus tripartitis, ad basim liberis, punctatis, ca. 0.3 mm. longis. Fructus globosus, ad maturitatem atrans, pericarpio tenui, ca. 1 cm. longus, 0.7 mm. diametro, tri-loculatus, loculatis multi-seminatis, seminibus minutis, ca. 1 mm. diametro, pariter reticulato-tuberculatis.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. Arnold Arboretum, collected on forested slopes of Montaña de las Palomas, tributary of Río Neverí, between "Carmelita" and "Natalia," northeast of Bergantín, state of Anzoátegui, alt. 900-1000 m., March 9, 1945, *Julian A. Steyermark 61443*, "tree 25 m. high with smooth buff bark; leaves drooping in two planes, firmly membranaceous, deep dull green above, pale green below with yellow-green nerves; petals creamy white; calyx pale green; fruit ovoid, deep green turning dark purple and shiny."

Also collected on Montaña de Aguacate, along Quebrada de Pajarral, tributary to Río Caripe, northeast of Alto de Aguacate, between Caripe and Caripito, alt. 600-900 m., April 19, 1945, *Steyermark 62206*, "tree 15 m. tall; leaves firmly membranaceous, dark green above, pale green below; corolla whitish; calyx pale dull green."

This species is most closely related to the Bolivian *F. inaequilatera* Britton. The latter species differs from *F. Steyermarkii* in the

[22] By Clarence E. Kobuski, in part.

dense tomentose pubescence found on the branchlets, leaves, pedicels and other parts of the plant, the coriaceous (rather than membranaceous) elliptic-lanceolate leaves, and the larger, deltoid, apiculate bracteoles.

Ternstroemia acrodantha Kobuski & Steyermark, sp. nov.

Arbor omnino glabra, 10-27 m. alta vel frutex ca. 8 m. altus, ramulis teretibus griseis. Folia coriacea, obovata, 8-10 cm. longa, 3.5-4.5 cm. lata, apice obtuse acuta vel rare subrotundata, basi cuneata, supra viridia, subtus flavo-viridia et punctata, margine subrevoluta, integerrima vel leviter glandulosa, costa supra canaliculata subtus elevata, nervis (ca. 10 paribus) subinconspicuis, petiolis ca. 10 mm. longis. Floris solitarii, 4-10, apice ramulorum congesti, pedicellis 3.5-5 cm. longis, teretibus, tenuiter erectis vel suberectis; bracteolis 2, oppositis, apice pedicelli positis, inaequalibus, deltoideis et ovatis, ca. 5 x 5 mm. et ca. 5 x 3 mm., margine glanduloso-denticulatis; sepalis 5, imbricatis, subrotundatis, 6-8 mm. longis, 7-8 mm. latis, exterioribus duobus margine glanduloso-denticulatis, interioribus tribus margine integerrimis et laeve membranaceis; petalis 5, albis, suavissimis, obovatis, concavis, basi connatis, circiter 12 mm. longis et 9 mm. latis; staminibus numerosis (ca. 100+), ut videtur 3-seriatis, 7-10 mm. longis, filamentis connatis, albis, basi corollam adnatis, 2-3 mm. longis, antheris elongatis, aureo-luteis, 5-7 mm. longis, apice non apiculatis, ovario conico, basi ca. 4 mm. diametro, 3-loculato, stylo crasso, ca. 2 mm. longo, stigmate 3-lobato, crenato-capitato. Fructus non visus.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. Arnold Arboretum, collected on rich steep northwest- and northeast-facing forested slopes above "La Isla," above Tabay, state of Mérida, alt. 2285-2745 m., May 18, 1944, *Julian A. Steyermark 56582*, "tree 10-27 m.; leaves coriaceous, deep green above, dull green and brownish punctate below; flowers fragrant, the petals waxy-white, the sepals pale green in lower half, pink above with whitish margins, the pedicels pale green, the filaments white."

Other collections, all from the state of Mérida, are the following: rich forest on slopes near summit of Cerro San Isidro, above La Carbonera, alt. 2430-2475 m., April 22, 1944, *Steyermark 56041;* along Río Albareggas, Monte Serpa, 5-10 kms. northeast of Mérida, alt. 1675-2135 m., April 18, 1944, *Steyermark 55937*, "tree 8-10 m;" rich forest above Hacienda Agua Blanca, above La Azulita, alt. 1375-1920 m., April 25, 1944, *Steyermark 56090*, "tree 8-10 m.; anthers golden."

Local name: "manteca negra."

This species is closely related to *T. macrocarpa* Tr. & Pl. in the 3-celled ovary, the 3-crenate-capitate stigma, and the large leaves. It differs from *T. macrocarpa* in having the flowers aggregated (4-10) at the summit of the branches rather than solitary-axillary, in the slender pedicels, in the glandular-denticulate outer calyx-lobes, the shorter petals, and in the location of the bracteoles which are im-

mediately below the calyx rather than 5-7 mm. below; also in the smaller calyx-lobes (6-7 or up to 10 mm. rather than 11-13 mm. long).

Ternstroemia camelliaefolia Linden & Planchon, var. **minor** Kobuski & Steyermark, var. nov.

A specie differt foliis angustioribus (2.5-3.5 cm. latis), pedicellis longioribus (ca. 8 mm. longis), et floribus paucioribus minoribusque.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. Arnold Arboretum, collected on seaward-facing north slopes, El Junquito, Cordillera de la Costa, alt. 1830-2130 m., June 19, 1944, *Julian A. Steyermark 56979*, "tree 8 m. with deep rich brown branchlets; leaves coriaceous-chartaceous, deep green and shiny above, pale green below, brown punctate; sepals greenish white."

Careful dissections show that *Steyermark 56979* clearly belongs with the species, *T. camelliaefolia*. However, because of its less robust characters, in general it appears distinct. The leaves are narrower, measuring only 2.5-3.5 cm. in width; the pedicels are somewhat longer, measuring up to 8 mm.; the flowers are fewer, hence less crowded at the apices of the branchlets.

Ternstroemia Steyermarkii Kobuski, sp. nov.

Arbor omnino glabra, 10-20 m. alta; ramulis griseis vel brunneo-griseis, teretibus. Folia chartacea vel subcoriaceo-chartacea, obovata, 4-7 cm. longa et 1.5-2.5 cm. lata apice acuta (vel rare obtusa), undique granulo-punctata, super viridia, subtus pallido-viridia, margine integra vel subintegra, costa supra canaliculata, subtus elevata, nervis inconspicuis, petiolis ca. 1 cm. longis. Flores solitarii, axillares, pedicellis 1-2 cm. longis, recurvatis vel suberectis, teretibus; bracteolis 2, oppositis, apice pedicelli positis, subaequalibus lanceolatis, 2-3 mm. longis, 0.5-1 mm. latis margine glanduloso-denticulatis; sepalis imbricatis, inaequalibus, exterioribus duobus late ovatis, ca. 3.5 mm. longis et 3 mm. latis, margine glanduloso-denticulatis, interioribus tribus subrotundatis, 5-6 mm. longis et 5 mm. latis, margine membranaceis, eglandulosis; petalis 5, concavis, basi connatis, obovatis, ca. 7 mm. longis et 7-7.5 mm. latis; staminibus numerosis (100+), ut videtur 3-seriatis, 3-5 mm. longis, filamentis connatis, basi corollam adnatis, 1.5-4 mm. longis, antheris ca. 1-1.5 mm. longis; ovario conico vel subgloboso basi 3 mm. diametro, ca. 2 mm. longo, 2-loculato, loculo utroque 2-ovulato, stylo integro, ca. 1.5-2 mm. longo, stigmate crenato-capitato. Fructus subglobosus vel ovoideus, 1-1.5 cm. longus, 2-loculatus, loculo utroque duobus seminibus.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. Arnold Arboretum, collected around dried sphagnum bog in cloud forest on wooded summit of Cerro Paeonía (Cerro Los Pajaritos), above Santa Cruz, headwaters of Río Manantiales, east of Bergantín, state of Anzoátegui, alt. 2350 m., March 21, 1945, *Julian A. Steyermark 61665*, "tree ca. 15 m.; leaves subcoriaceous, dark green above, dull green below; calyx greenish white, the petals whitish."

Also collected on north-facing slopes between La Trinidad and Quebrada El Boguerón, southwest of Cocollar, Cerro Turumiquire, state of Sucre, alt. 1700-1800 m., May 3, 1945, *Steyermark 62454*, "tree 20 m. with smooth gray-brown bark; leaves coriaceous-chartaceous;" and above La Trinidad in cloud forest zone southwest of Cocollar, Cerro Turumiquire, state of Sucre, alt. 2100-2200 m., May 5, 1945, *Steyermark 62558*, "tree 15-20 m.; petals dull white, the filaments white."

This species appears to be most closely allied to *T. Mutisiana* Kob. in the 2-celled ovary, the capitate stigma, the shorter style and the lanceolate bracteoles, but differs in the more numerous stamens in three or more series, the longer filaments, the absence of a projection on the anthers and in the chartaceous leaves. In this last character the species resembles *T. oligostemon* Krug & Urban but differs in the 2-celled ovary and the glandular-denticulate outer sepals and bracteoles.

Ternstroemia Steyermarkii, var. **submontana** Kobuski, var. nov.

A specie differt foliis longioribus (ad 12 x 5 cm.), bracteolis late ovatis vel suborbicularibus.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. Arnold Arboretum, collected in vicinity of La Cuchilla, between Guanaguana and Güacharo, state of Monagas, alt. 1200-1480 m., April 21, 1945, *Julian A. Steyermark 62256*, "tree 20-25 m.; leaves subcoriaceous, dark green above, pale green below."

Also collected along forested slopes of headwaters of tributaries of Río Neverí, between Río León and "Carmelita," northeast of of Bergantín, state of Anzoátegui, alt. 800-1200 m., March 5, 1945, *Steyermark 61365*, "small tree 6-8 m.; fruit broadly conic, olive-green."

This variety is from a much lower altitude and differs in the larger leaves and the broadly ovate or suborbicular bracteoles. The fruit may be either two- or three-celled, both kinds being found on a single specimen, the type.

Ternstroemia unilocularis Kobuski & Steyermark, sp. nov.

Frutex omnino glaber, 1-2 m. altus (vel arbor 6-8 m. alta, *Steyermark 62718*); ramulis teretibus, griseis. Folia coriacea, erecta, variabilia, elliptica, obovata vel suborbicularia, 3-4 (-5) cm. longa, 1.5-1.8 cm. lata apice rotundata vel obtusa, basi abrupte attenuata, supra viridia, subtus ferrugineo-brunneo vel pallide viridia, brunneo-punctata, margine subrevoluta, glanduloso-denticulata, costa supra canaliculata, subtus elevata, venis ca. 6 paribus, supra leviter depressis, subtus obscuris, petiolis 5-7 mm. longis. Flores solitarii, axillares; pedicellis recurvatis, ca. 10 mm. longis, teretibus; bracteolis 2, basi calycis positis, oppositis, subaequalibus, rugosis, subrotundatis, 1.75-2 mm. longis, 1.5-2 mm. latis, apice leviter glanduloso-denticulatis; sepalis 5, imbricatis, subrugosis, subaequalibus, latioribus quam longis, semi-orbicularibus, 2.5-3 mm. longis, 3-4 mm. latis, exterioribus duobus margine glanduloso-

denticulatis, interioribus tribus margine modo leviter submembranaceis; petalis 5, sepaloideis obovatis, concavis, basi leviter connatis, apice rotundatis, ca. 6 mm. longis, 4.5-5 mm. latis, margine minute denticulatis; staminibus ca. 45 vel 50, 3-4 mm. longis, ut videtur 2-seriatis, inaequalibus, filamentis connatis, basi corollam adnatis, 1.5-2.5 mm. longis, antheris ca. 1.5 mm. longis, nonnumquam apiculatis; ovario longe conico, basi 2 mm. diametro, ad stigma attenuato, 1-loculato, pauci-ovulato, pericarpio 0.75 mm. crasso, stylo indistincto (vel nullo), stigmate 3-lobato, crenato-peltato. Fructus subglobosus, ca. 7 mm. diametro, uno-loculatus, pauci-seminatus (ca. 2), seminibus ca. 6 x 5 mm.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. Arnold Arboretum, collected on south-facing steep slopes, on rocky exposed shrubby portion of knife-edge ridge above tree zone, Cerro Paeonía (Cerro Los Pajaritos), above Santa Cruz, headwaters of Rio Manantiales, east of Bergantín, state of Anzoátegui, alt. 1800-2000 m., March 20, 1945, *Julian A. Steyermark 61626*, "shrub 1-2 m.; leaves erect, coriaceous, deep green above, pale green below, the petioles deep red; pedicels nodding, dull red; corolla creamy white, the sepals pale green, tinged rose-red."

Also collected in valley between base of Cerro de Diablo (western extension of southern peak of Cerro Turumiquire) and Cerro de Neverí, along headwaters of Río de Amana, state of Sucre, alt. 2000 m., May 11, 1945, *Steyermark 62718*, "tree 6-8 m.; leaves dark green above, ferrugineous-brown on young leaves and stems, silvery with pale rufous on older leaves."

The species most closely related to *T. unilocularis* is *T. discoidea* Gleason, also of Venezuela. The latter species can be separated by the longer pedicels (2.8 cm. long), the long-ovate, alternate bracteoles, the more numerous (100+) uni-seriate stamens, the distinct style 2 mm. long, and the striate verticillate branchlets.

This is the third species described from South America with a single-celled ovary, the other two being *T. discoidea*, mentioned above, and *T. Gleasoniana* Kob. from British Guiana. The features by which *T. Gleasoniana* can be separated from *T. unilocularis* are: the much larger leaves (18-21 x 7-8 cm.) with the epunctate lower surface; the bracteoles at the base of the pedicel; the long-acuminate petals connate for one-half the length; and the punctiform stigma.

GUTTIFERAE

Caraipa ferruginea Steyermark, sp. nov.

Arbor 18-metralis; ramulis dense ferrugineo-hirtellis; foliis subcoriaceis petiolatis, petiolis 4-8 mm. longis dense tomentellis; laminis oblongo-lanceolatis vel lanceolatis apice acutis vel acuminatis basi rotundatis 9-16.5 cm. longis 2.7-4.3 cm. latis supra glabris vel glabrescentibus subtus pilis stellulatis vel simplicibus munitis, subtus ferrugineis, marginibus subrevolutis, costa media supra sulcata, subtus prominenti dense stellulato-tomentella, nervis

secundariis utroque 18-23 prominentibus subtus praecipue; inflorescentia terminali; floribus ignotis; pedunculis fructiferis 1.7-2 cm. longis dense stellulato-tomentellis; capsula rhomboideo-triquetra 1.1-1.5 cm. longa 1.7-2 cm. diametro extus parce minute stellulata ceterum glabra; semine suborbiculari fusco 1.3 cm. diametro.

Type in herb. Chi. Nat. Hist. Mus., collected en la selva de Yavita, Territorio Federal Amazonas, alt. 128 m., February 2, 1942, *Llewelyn Williams 14140*, "arbol de 18 m. de altura, con corona algo pequeña; tronco redondo, sin estribos, 20 cm. de diámetro, algo torcido; fr. solitario, capsular."

This species is characterized by the brownish tomentum on the young stems, petioles, and lower surface of the leaf blades.

Caraipa longipedicellata Steyermark, sp. nov.

Arbor 25-metralis vel ultra; ramulis vetustioribus glabris; foliis coriaceis petiolatis, petiolis 6-11 mm. longis vetustioribus parce stellulato-tomentellis vel glabrescentibus juvenilibus dense stellulato-tomentellis; laminis supra in sicca glaucescentibus subtus cinereis, elliptico-oblongis vel suboblongis apice rotundatis vel subemarginatis basin versus angustatis subobtusis vel subacutis 6.5-12.7 cm. longis 3-6 cm. latis, supra pilis stellulatis parce munitis vetustioribus, glabrescentibus, subtus minute stellulatis, marginibus subrevolutis, costa media subtus prominenti, nervis secundariis utroque 10-12 subtus prominulis; inflorescentia terminali laxe racemiformi 9-12 cm. longa dense tomentella, pedicellis robustis 5-14 mm. longis dense tomentellis; bracteis ovatis obtusis vel acutis 3-4.5 mm. longis 2.5-3 mm. latis utrinque dense tomentellis; sepalis suborbicularibus vel late ovatis apice acutis vel rotundatis 5-5.5 mm. longis 4-4.5 mm. latis utrinque dense tomentellis; petalis extus dense tomentosis (immaturis); fructu non viso.

Type in herb. Chi. Nat. Hist. Mus., collected in dense forest along Río Karuai bordering savanna between base of Ptari-tepuí and Sororopán-tepuí, state of Bolívar, alt. 1220 m., November 28, 1944, *Julian A. Steyermark 60708*, "tree 80 feet tall; leaves coriaceous, deep green above, gray below; calyx and rachis yellow-brown; petals mustard brown."

This species resembles *C. grandifolia* Mart. and *C. paraensis* Hub. of northern Brazil in its large sepals, stout pedicels, and upper leaf surface, which is glaucescent in the dried state. It differs from both in its much longer and stouter pedicels. From *C. grandifolia* it further differs in the loosely racemiform, elongated inflorescence, minutely stellulate pubescence on the lower surface of the leaf, and the rounded leaf tip, while from *C. paraensis* it differs principally in the stouter and much longer pedicels.

From *C. simplicior* Sandwith it may be distinguished by the more numerously flowered inflorescence, shorter sepals, and broader leaves, which are more rounded at the apex and glabrescent and glaucous above.

Chrysochlamys pauciflora Steyermark, sp. nov.

Frutex 1.8-2.8-metralis; ramis glabris; foliis subcoriaceis petiolatis, petiolis 1.5-2 cm. longis glabris supra canaliculatis; laminis obovatis apice subito acuminatis basi acutis sensim angustatis 16-24 cm. longis 6.5-9.5 cm. latis glabris, costa media utrinque prominenti, nervis secundariis utroque 11-12 ante marginem anastomosantibus subtus prominulis; floribus foemineis tantum visis axillaribus; pedicellis crassis 6-9 mm. longis minutissime puberulis; bracteis ovatis obtusis 0.8-0.9 mm. longis; sepalis rubris 4 vel 5 suborbicularibus vel late ovatis obtusis 2-3 mm. longis 2-3 mm. latis extus minutissime puberulis; stigmatibus 5; ovario 5-loculari, quoque loculo 1-ovulato.

Type in herb. Chi. Nat. Hist. Mus., collected in lower portion of Quebrada O-paru-má, tributary of Río Pacairao, below Santa Teresita de Kavanayén, state of Bolívar, alt. 915-1065 m., November 25, 1944, *Julian A. Steyermark 60566*, "simple-stemmed shrub 5-8 feet tall; leaves subcoriaceous, deep green above, dull green below; pedicel dull red with green fruit dull pale green; calyx dull red."

Local name: "wacami-yek."

There is some question about the certain generic affinity of this species. If it is congeneric with *Chrysochlamys*, it is perhaps related to *C. macrophylla* Pax of Bolivia. It may likely be referable to the genus *Balboa* Planch. & Triana of Colombia, known only from staminate material. That genus, however, possesses 4 sepals and 4 petals.

Clusia cerroana Steyermark, sp. nov.

Arbor 11-metralis; ramulis crassis; foliis coriaceis in petiolum decurrentibus, petiolis 0.8-2.5 cm. longis 4-7 mm. latis glabris; laminis obovatis vel oblongo-spatulatis apice rotundatis basin versus longe cuneatim angustatis 10.5-15 cm. longis 4.5-6 cm. latis glabris, costa media prominenti, nervis lateralibus numerosis adscendentibus utrinque prominulis, nervo collectivo a margine 1-1.5 mm. conjunctis; inflorescentia foeminea terminali atque subterminali ca. 5-flora, pedicellis crassis 3-6 mm. longis 4-5 mm. latis glabris; bracteolis suborbiculari-ovatis apice rotundatis 4-5 mm. longis ca. 5 mm. latis; floribus foemineis aggregatis congestis; sepalis 4 suborbicularibus apice rotundatis 4-5 mm. longis 6-6.5 mm. latis glabris; synandrio elliptico-ovoideo, 11-13 mm. longo 11-12 mm. diametro; stigmatibus 5-6 crassis suborbiculari-discoideis; stylis 3-4 mm. longis; ovulis in loculis 2-3.

Type in herb. Chi. Nat. Hist. Mus., collected on forested sandstone south-facing slopes of Ptari-tepuí, between plateau portion and "Cave Camp," state of Bolívar, alt. 1700-1800 m., November 1, 1944, *Julian A. Steyermark 59702*, "tree 35 feet tall; leaves coriaceous, deep green above, pale green below; ovary pale green."

This species is probably related to *C. purpurea* (Splitg.) Engl. and *C. leprantha* Mart., but differs from both in having 4 instead of 6-9 sepals and in the larger, more numerous stigmas. It is especially

well marked in possessing short, contracted inflorescences, enlarged stigmas, only 2-3 ovules in each cell of the ovary, and elongated petioles. It shows a relationship with *C. Melchiori* Gleason in the 2-3-ovulate cells of the ovary, and probably should be treated as an aberrant member of the genus, allied to *C. Melchiori* and *C. flaviflora* Engl., and placed with them under Sect. *Anandrogyne* Planch. & Triana.

Clusia hexacarpa Gleason, var. **ptaritepuiana** Steyermark, var. nov.

Arbor 13-metralis; ramulis crassis glabris; foliis coriaceis petiolatis, petiolis 1-1.5 cm. longis supra canaliculatis; laminis ovalibus vel elliptico-oblongis apice rotundatis basi subacutis 4.5-7.2 cm. longis 2.7-4.5 cm. latis glabris, nervis lateralibus numerosis adscendentibus subtus vix elevatis; floribus foemineis solitariis cernuis; pedicellis robustis 6-7 mm. longis; sepalis 6 imbricatis, duobus exterioribus minoribus 6 mm. longis, ceteris 7-10 mm. longis; petalis 7 coriaceis crassis 15-17 mm. longis 9 mm. latis; staminodiis 9 liberis 3.5 mm. longis 1.8 mm. latis; stigmatibus 6 triangulari-ovatis.

Type in herb. Chi. Nat. Hist. Mus., collected on forested sandstone south-facing slopes, vicinity of "Cave Rock," Ptari-tepuí, state of Bolívar, alt. 1800 m., November 4, 1944, *Julian A. Steyermark 59866*, "tree 40 feet tall; leaves coriaceous, dark green above, pale green below; fruiting ovary creamy white; stigmas purple; sepals dull rose with pale green margins; inner petals white with deep rose above or on margins."

This differs from *C. hexacarpa*, described originally from Mount Duida, by the purple stigmas, rose-colored sepals, and the white and rose-colored petals. It may subsequently be found to represent a distinct species, but is here treated as a variety of the Duida plant.

Clusia imbricata Steyermark, sp. nov.

Arbor 10-metralis, ramulorum internodiis 1.5-3 cm. longis; foliis coriaceis adscendenti-erectis, vetustioribus subtus fulvis juvenilibus pallide flavo-viridibus, in petiolum late decurrentibus, petiolis 1.7-2 cm. longis basi dilatatis; laminis ligulato-spatulatis apice rotundatis basin versus cuneatim angustatis 5.5-10 cm. longis 2.1-3.2 cm. latis glabris, marginibus valde revolutis, costa media subtus prominente elevata, nervis secundariis numerosis supra paullo prominulis subtus obscuris; floribus foemineis solitariis terminalibus; pedicellis robustis 5 mm. longis 8 mm. latis; bracteis 2 suborbiculari-oblongis 14 mm. longis 14 mm. latis infra basin calycis 4 mm. insertis; sepalis 5 valde prominente imbricatis magnis suborbiculari-oblongis infimis 2 cm. longis 1.7 cm. latis intimis 1.8 cm. longis 1.5 cm. latis; petalis 5 late oblongis vel rhomboideo-oblongis apice truncatis 2.3 cm. longis 2 cm. latis; staminodiis numerosis biseriatis sterilibus ut videtur antheris desunt 6.5 mm. longis; stigmatibus 20 capitatis in medio depressis; ovario multi-loculari, 20-loculari (Fig. 79).

Type in herb. Chi. Nat. Hist. Mus., collected on forested sandstone south-facing slopes between plateau portion and "Cave

FIGURE 79

Clusia imbricata

A, Habit of flowering branch (X ½); B, Petal (X 1); C, Pistillate flower with bracts attached (X 1).

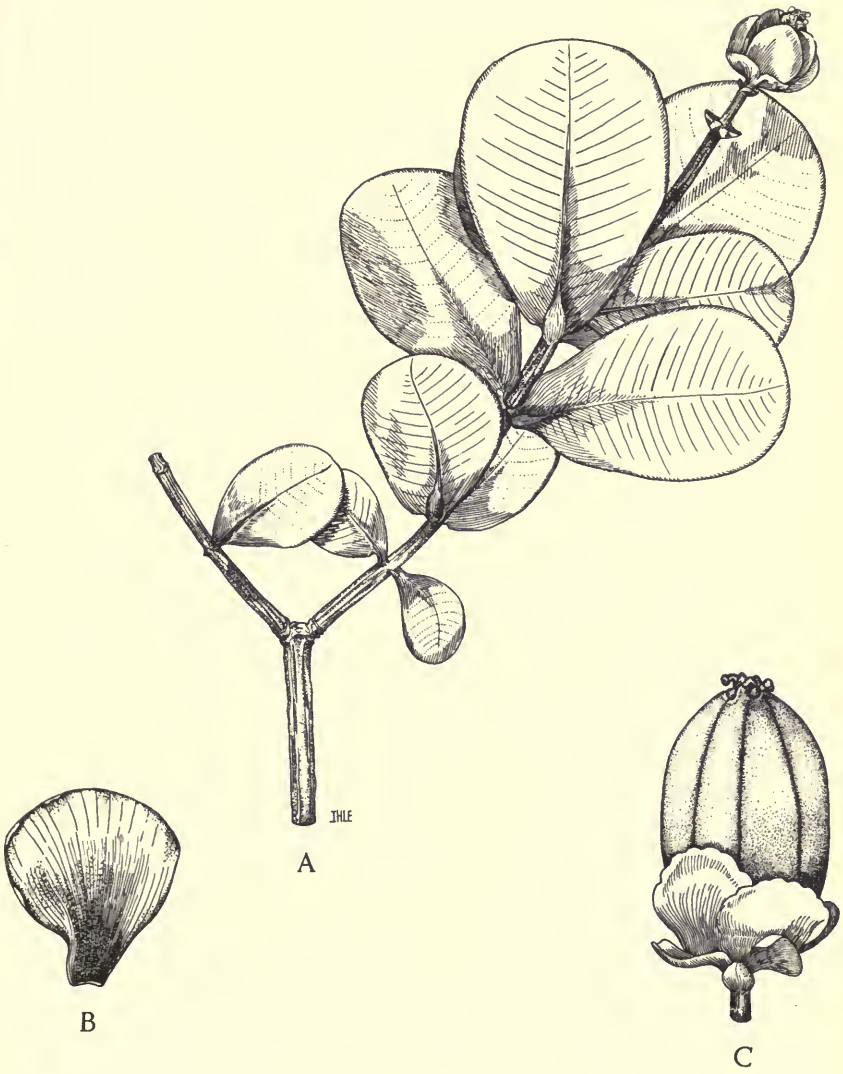


FIGURE 80

Clusia pusilla

A, Habit of flowering branch (X 2/3); B, Petal (X 1.2); C, Pistillate flower in young fruit (X 1.2).

Camp," Ptari-tepuí, state of Bolívar, alt. 1700-1800 m., November 1, 1944, *Julian A. Steyermark 59699*, "tree 30 feet tall; leaves ascending-erect, coriaceous, deep green above, tawny yellow-brown on older leaves below, pale yellow green on young leaves below; perianth deep rose-red with white at base, innermost petals whitish above with rose within."

This species may be readily distinguished by the enlarged imbricate sepals and petals, many-celled ovary with 20 stigmas, strongly revolute leaves which are not nerved beneath and are impressed-nerved above, by the winged petiole dilated at base, and by the tawny yellow-brown color of the lower leaf surface.

With its numerous stigmas it is to be placed near *C. grandiflora* Splitg. and *C. platystigma* belonging to Sect. *Euclusia*, Subsect. *Chlamydoclusia* as treated by Engler in Martius's Flora Brasiliensis. It is also related to *C. macropoda* Klotzsch and *C. palmicida* L. C. Rich. From these species and from *C. grandiflora* it is distinguished by its much narrower, revolute leaves, yellow-brown on the lower surface, by the winged petioles dilated at the base, by the strongly imbricate sepals and petals, and by the 20-celled ovary and 20 stigmas.

Clusia pusilla Steyermark, sp. nov.

Frutex 1.3-2-metralis; ramulorum internodiis 1.2-3 cm. longis; foliis coriaceis sessilibus vel subsessilibus; laminis supra atro-viridibus subtus pallido-viridibus late oblongo-obovatis vel cuneato-obovatis apice rotundatis vel truncatis basin versus cuneatim angustatis 3.2-6 cm. longis 1.6-4.5 cm. latis, marginibus subrevolutis, costa media subtus prominula, nervis secundariis numerosis patentibus supra vix prominulis subtus paullo prominulis; floribus foemineis solitariis terminalibus; pedicellis 6-8 mm. longis; bracteis suborbiculari-ovatis apice rotundatis 4.5-5 mm. longis 4 mm. latis; sepalis 6 orbicularibus extimis 6-10 mm. longis; petalis 4 oblique subrhomboideo-obovatis apice rotundatis 2 cm. longis apice 1.8 cm. latis; staminodiis numerosis omnibus liberis 3.5-4 mm. longis, exterioribus plerumque sterilibus interioribus fertilibus; stigmatibus 8 peltato-discoideis depressis (Fig. 80).

Type in herb. Chi. Nat. Hist. Mus., collected in dry rocky thickets on uneven ground, on large mesa, Gran Sabana, between Mission of Santa Teresita de Kavanayén, northwest to Río Karuai, state of Bolívar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark 59396*, "shrub 4-6 feet tall; leaves coriaceous, dark green above, greenish-white below; fruit pale greenish-creamy; petals creamy-white, 2 cm. long."

This species is distinguished mainly by the small, sessile, obovate-cuneate leaves, the 8 stigmas, 6 sepals, and numerous free staminodia, of which the inner are fertile.

It should be placed in Sect. *Criuva*, Subsect. *Clusiastrum* acc. to Engler, in Mart. Fl. Bras. It is apparently most closely related to *C. fragrans* Gardn. and *C. cuneata* Benth. It further resembles *C.*

fluminensis Tr. & Pl. in leaf shape but has much smaller leaves than that species, more numerous staminodia, and 8 instead of 5 styles. It also resembles *C. elliptica* H.B.K. in leaf shape, but that species does not have the numerous staminodia.

Clusia reducta Steyermark, sp. nov.

Arbor 3-6-metralis; foliis coriaceis petiolatis, petiolis 8-11 mm. longis; laminis oblongis vel elliptico-oblongis apice rotundatis basin versus angustatis subacutis vel obtusis 5-8.5 cm. longis 2.5-4.7 cm. latis, marginibus revolutis, costa media utrinque prominenti, nervis secundariis numerosis patentibus supra paullo prominulis subtus vix prominulis; floribus foemineis terminalibus; pedicellis 3-7 mm. longis; bracteis late ovatis apice rotundatis 2-2.5 mm. longis; sepalis 6 suborbicularibus apice rotundatis 4-4.5 mm. longis 4.5-5 mm. latis; staminodiis 1-seriatis numerosis; stigmatibus 5; ovario 5-loculari, loculis 1-ovulatis; arillo nullo.

Type in herb. Chi. Nat. Hist. Mus., collected en las lajas abiertas en la costa del Caño San Miguel, arriba de la boca del Ichana, Guainía, Territorio Federal Amazonas, alt. 125 m., March 26, 1942, *Llewelyn Williams 14898*, "arbol de 5 a 6 m. con copa frondosa; el tronco de 10 a 12 cm. de diám., ramificado desde cerca de la base; corteza gris, algo áspera, y el liber color claro, exuda una pequeña cantidad de resina; la madera de tono claro; las hojas coriaceas."

Other collections from Territorio Federal Amazonas in herb. Chi. Nat. Hist. Mus. are: en la margen de las malezas y en los claros en la selva de Pimichín, alt. 128 m., February 7, 1942, *Williams 14183;* and Maroa, Río Guainía, alt. 127 m., 1942, *Williams 14254.*

Local name: "copei;" "upihi;" "baniba."

The generic status of this species is uncertain. It is apparently an aberrant member of the genus *Clusia* distinguished by the single ovule in each cell of the ovary. It may be related to *C. Melchiori* Gleason, from which it differs in the conspicuously petiolate leaves of different shape, the lateral nerves of the lower leaf scarcely or not evident, the 5 stigmas, and 6 sepals. It has a slight aspect of *C. renggerioides* Pl. & Triana, but that has many ovules and a more cuneate-obovate leaf shape. It shows some resemblance to the genus *Havetiopsis*, but that genus has 4 stigmas and a 4-celled ovary.

Clusia roraimana Steyermark, sp. nov.

Arbor vel frutex 3-5-metralis; ramulorum internodiis 1.3-1.7 cm. longis; foliis coriaceis sessilibus, laminis supra atroviridibus subtus pallidis obovatis apice rotundatis basi graduatim cuneatis 9-12 cm. longis prope basin 8-11 mm. latis glabris, marginibus subrevolutis, costa media subtus prominula, nervis secundariis utroque 21-22 utrinque paullo prominentibus adscendentibus; floribus masculis terminalibus 3 confertis: pedunculis 1.5-2 cm. longis 5-6 mm. diametro; pedicellis 4-7 mm. longis; bracteis 2 patentibus cucullato-suborbicularibus apice rotundatis 10-13 mm. longis 9-14 mm. latis; sepalis 6 suborbicularibus extimis 8-12 mm. longis interioribus ad

15 mm. longis; petalis 5-6 obovatis apice rotundatis basi cuneatis 3-3.5 cm. longis 2-2.8 cm. latis; staminibus numerosis 4 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on southwest-facing slopes bordered by hilly savanna, Mount Roraima, state of Bolívar, alt. 1030-1155 m., September 25, 1944, *Julian A. Steyermark 58606*, "tree or shrub 10-15 feet tall; leaves coriaceous, dark green above, pale green below; sepals greenish white with rose; petals white; flowers fragrant."

This species is distinguished chiefly by the combination of sessile or subsessile leaves with broadly decurrent leaf bases, cuneate-obovate rounded leaves, glomerate staminate inflorescence on a short peduncle, numerous free stamens, and large petals.

It is closely related to *C. cuneata* Benth., from which it differs in the much larger staminate flowers, the 3-flowered glomerate staminate inflorescence, the shorter peduncles, larger sepals, and larger stamens.

From the recently described *C. stylosa* Maguire and *C. tabulamontana* Maguire the leaves of this new species differ in lacking the collective marginal nerve so conspicuous in those two species.

Clusia Williamsii Steyermark, sp. nov.

Internodia ramulorum 1.2-2.3 cm. longis; foliis subcoriaceis petiolatis, petiolis 2-2.8 cm. longis; laminis late ellipticis vel oblongo-ellipticis utrinque acutis 10.5-18 cm. longis 4.5-8 cm. latis glabris; marginibus incrassatis, costa media paullo prominula, nervis secundariis numerosis gracilibus conspicuis patentibus; inflorescentia mascula terminali divaricatim ramosa 5.5-6.5 cm. longa, ramulis secundariis 1.2-1.5 cm. longis; pedunculis 2.7-3.2 cm. longis ad 2.5-3 mm. diametro; bracteis suborbicularibus vel infimis ovatis 1.5-5 mm. longis; sepalis suborbicularibus 5-6 mm. longis 5-7 mm. latis; petalis 5 obovato-cuneatis apice rotundatis 15 mm. longis ad apicem 8 mm. latis; staminibus in columnam discoideam depressam 3 mm. altam 4.5 mm. diametro.

Type in herb. Chi. Nat. Hist. Mus., collected en la selva de Yavita, Territorio Federal Amazonas, alt. 128 m., February 2, 1942, *Llewelyn Williams 14143*, "bejuco leñoso sobre los troncos de árboles; los pétalos son blancos con tono rojizo en la cara superior; la corteza gris, lisa exuda una resina amarilla en pequeña cantidad; albura blanca y el duramen rosado."

This species is apparently a member of Subsection *Omphalanthera* and probably related to *C. columnaris* Engl. It differs from that species in its larger leaf blades with nearly horizontal lateral nerves, smaller staminate flowers, and more slender rachis of the staminate inflorescence.

Havetia laurifolia H.B.K., var. **venezuelana** Steyermark, var. nov.

A typo differt foliis apice late rotundatis.

Type in herb. Chi. Nat. Hist. Mus., collected on rich steep northwest- and northeast-facing forested slopes above "La Isla," above

Tabay, state of Mérida, alt. 2285-2745 m., May 18, 1944, *Julian A. Steyermark 56592.*

Also collected in rich moist woods at base of Páramo de Tamá, 4-10 kms. above Betania, state of Táchira, alt. 2500-2895 m., July 15, 1944, *Steyermark 57312;* and in moist cloud forest on south- and southwest-facing slopes at Palojosco above Los Aposentos, above Humocaro Bajo, state of Lara, alt. 2530-2375 m., February 4, 1944, *Steyermark 55234.*

This differs from *H. laurifolia* in the leaves broadly rounded at the apex.

Hypericum caracasanum Willd., var. **turumiquirense** Steyermark, var. nov.

Suffrutex 0.8-1.8-metralis; foliis dense confertis erecto-adscendentibus ovato-ellipticis vel ellipticis apice acutis vel subacutis 5-8 mm. longis 2-3.5 mm. latis; sepalis inaequalibus majoribus obovato-oblongis ceteris oblanceolato-oblongis obtusis, 5-6 mm. longis 2-3 mm. latis; petalis ellipticis 11-12 mm. longis; staminibus ca. 70; stigmatibus tribus, 4-4.5 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on north-facing steep sandstone slopes, Cerro Turumiquire, from beginning of sandstone to summit of cerro, state of Sucre, alt. 2360-2500 m., May 6, 1945, *Julian A. Steyermark 62579,* "suffruticose, 2-5 feet tall; petals deep yellow; leaves pale silvery green."

This differs from typical *H. caracasanum* principally in the smaller leaves, sepals, and petals.

Hypericum ericaefolium Steyermark, sp. nov.

Frutex 3-metralis; ramis glabris inferne denudatis superne laxe dichotomis dense foliosis, internodiis 1-2 mm. longis glabris; foliis sessilibus patentibus subcoriaceis lineari-setaceis vel linearilanceolatis apice acutis basin versus angustatis 4-5 mm. longis 0.5-0.7 mm. latis, marginibus revolutis, nervo medio subtus prominente; floribus terminalibus solitariis; pedicellis 1.5-2 mm. longis; laciniis calycis ovatis acutis vel acuminatis 3-3.5 mm. longis 1.5-2 mm. latis, marginibus revolutis; petalis 8-9 mm. longis; staminibus 40-50; stylis 3, 5 mm. longis; ovario 1.5 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected in swampy meadow in Paramito between Quebrada de Palmar and Quebrada de Paramito, at base of Páramo de Tamá, 2 kms. above Betania and 7 kms. above Villapaez, state of Táchira, alt. 2500 m., July 14, 1944, *Julian A. Steyermark 57212,* "shrub 10 feet tall; petals rich yellow."

This species is related to *H. chamaemyrtus* Tr. & Pl. and to *H. gnidioides* Seem. in having revolute leaves. From *H. chamaemyrtus* it differs in the spreading, much finer leaves, and details of floral structure. In general appearance it resembles some of the fine-leaved species, such as *H. laricifolium* Juss., but from all of this group it differs in the wide-spreading, revolute, instead of involute, leaves.

Hypericum meridense Steyermark, sp. nov.

Frutex 1-2-metralis; ramis superne dense foliosis, internodiis 1.5-2 mm. longis; foliis subcoriaceis dense confertis decussatis erecto-adscendentibus sessilibus oblongo-lanceolatis vel elliptico-oblongis apice acutis calloso-apiculatis basi angustatis obtusis 5.5-10 mm. longis 2-5.5 mm. latis glabris, marginibus incrassatis subrevolutis, costa media subtus prominenti, nervis lateralibus utroque 4-5 adscendentibus simplicibus vel furcatis ante marginem terminantibus; floribus solitariis terminalibus; laciniis calycis ovatis vel oblongo-lanceolatis apice subito acutis vel subobtusis 4 mm. longis 1.5-2.8 mm. latis; petalis 5.5-6 mm. longis; staminibus 65-70; stylis 3 valde curvatis 3.5 mm. longis ovario paullo longioribus; ovario 2.5 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected on Páramo de Pozo Negro, between San José and Beguilla, state of Mérida, alt. 2590-3220 m., May 3, 1944, *Julian A. Steyermark 56272*, "shrub 3-5 feet tall; leaves decussate, dull green."

Also collected en declives pendientes, secos y pedregosos, Páramo de Los Leones (La Lagunita, La Cañada Grande) al Oeste del Mucurubá, state of Mérida, alt. 3400-4500 m., May 31, 1930, *Gehriger 159*, "de hojuelas esparcidas y sentadas, tamaño del arbusto 1-2 m., hojuelas oval-lanceadas, 1 cm. de largo, insertas en 4 generatrices, flores de 5 sépalos, libres, 5 pétalos amarillos, libres, estambres indefinidos, ovario ínferio con 3 estilos largos, todos amarillos."

Local name: "yerba de Lucas, Huesito número 2."

This new species is related to *H. carinatum* Keller and *H. stenopetalum* Turcz., both described from Venezuela. It differs in the densely leafy branches, strongly ascending leaves with conspicuous lateral nerves, styles only slightly longer than the ovary, and the very spirally curved styles. It has shorter petals than those of *H. stenopetalum*. It is also related to *H. lancifolium* Gleason, but has more numerous stamens, shorter petals, and broader and proportionately shorter leaves than that species.

Hypericum pseudocaracasanum Steyermark, sp. nov.

Herba glaberrima, caulibus erectis basi decumbentibus 19-36 cm. altis, simplicibus vel parce ramosis foliosis, internodiis 3-15 mm. longis; foliis firme membranaceis vel subcoriaceis erecto-adscendentibus sessilibus lanceolato-ellipticis vel oblongo-ellipticis apice acutis basi subobtusis 9-16 mm. longis 2-5.5 mm. latis, marginibus subrevolutis, costa media subtus prominenti, nervis lateralibus utroque 3-4 subtus tantum prominulis; floribus solitariis terminalibus vel cymis foliosis ad flores singulos ad apices ramorum reductis; pedicellis 3-8 mm. longis; laciniis calycis oblongo- vel ovato-lanceolatis apice subito acutis calloso-apiculatis 4.5-6 mm. longis 1.5-3 mm. latis; petalis 7-8 mm. longis; staminibus 35-40; stylis 2.5-3 mm. longis; ovario 2.5-3 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected in small páramo on

exposed ridge top, La Quebrada Cortijo, by boundary line Lara-Trujillo, above Humocaro Bajo, state of Trujillo, alt. 2600-2800 m., February 6, 1944, *Julian A. Steyermark 55346*.

Also collected in wet meadow at Las Sabanetas, above Los Aposentos, west of Humocaro Bajo, state of Lara, alt. 2530 m., February 5, 1944, *Steyermark 55292*, "petals yellow."

Local name: "carnaval."

This species somewhat resembles *H. caracasanum* Willd., from which it differs chiefly in the herbaceous non-ligneous stems. It is related to *H. thymifolium* H.B.K., but differs in the herbaceous habit and in the leaves averaging broader and only 3 times instead of 4-8 times broader than long.

Mahurea sororopantepuiana Steyermark, sp. nov.

Frutex 0.8-2.8-metralis; ramulis laevibus teretibus ligneis glaberrimis; foliis coriaceis petiolatis, petiolis 1-1.5 cm. longis; laminis subtus pallido-viridibus lineari-lanceolatis vel anguste lanceolato-ellipticis utrinque acuminatis 7.5-11.5 cm. longis 1-2.7 cm. latis, costa media subtus prominenti, nervis lateralibus utroque 14-18 arcuato-patentibus, venulis subtilissime reticulatis; inflorescentia racemiformi; racemis terminalibus 8.5-10 cm. longis laxifloris; pedicellis 6-8 mm. longis; bracteis lineari-lanceolatis utrinque acuminatis 9-16 mm. longis 1.5-3 mm. latis; sepalis inaequalibus rubescentibus ovatis vel suborbiculari-ovatis apice rotundatis vel subacutis, 4-8 mm. longis 3-5 mm. latis extus minute puberulis, marginibus ciliolatis; petalis roseis obovatis apice rotundatis 10-12 mm. longis 5-7 mm. latis; staminibus pluriserialibus liberis; antheris late oblongis 2 mm. longis; filamentis 4-6.5 mm. longis; stylo 6.5 mm. longo; ovario ovoideo 6 mm. longo (Fig. 81).

Type in herb. Chi. Nat. Hist. Mus., collected by wooded streamlet, Sororopán-tepuí, crest of Cerro between east and west end, state of Bolívar, alt. 2255 m., November 14, 1944, *Julian A. Steyermark 60129*, "shrub 5-8 feet tall; sepals dull rose-red; petals pink; leaves coriaceous, deep green above, paler green below with lavender midrib."

This species differs from *M. exstipulata* Benth. in the glabrous and shorter inner sepals, the shorter anthers, the simple racemes, the longer, more foliaceous bracts which subtend the pedicels, and the narrower and much longer-pointed leaf blades.

Moronobea ptaritepuiana Steyermark, sp. nov.

Arbor 7-20-metralis; ramulorum internodiis brevibus; foliis coriaceis in petiolum angustatis, petiolis supra canaliculatis 5-10 mm. longis; laminis erectis vel erecto-adscendentibus obovato- vel spatulato-oblongis apice rotundatis basi cuneatis 3-5 cm. longis 1.5-2.5 cm. latis, marginibus subrevolutis, costa media subtus prominenti, nervis lateralibus patentibus plerumque obscuris subtus tantum paullo manifestis; floribus solitariis terminalibus magnis; pedicellis 5-10 mm. longis; sepalis suborbicularibus apice rotundatis

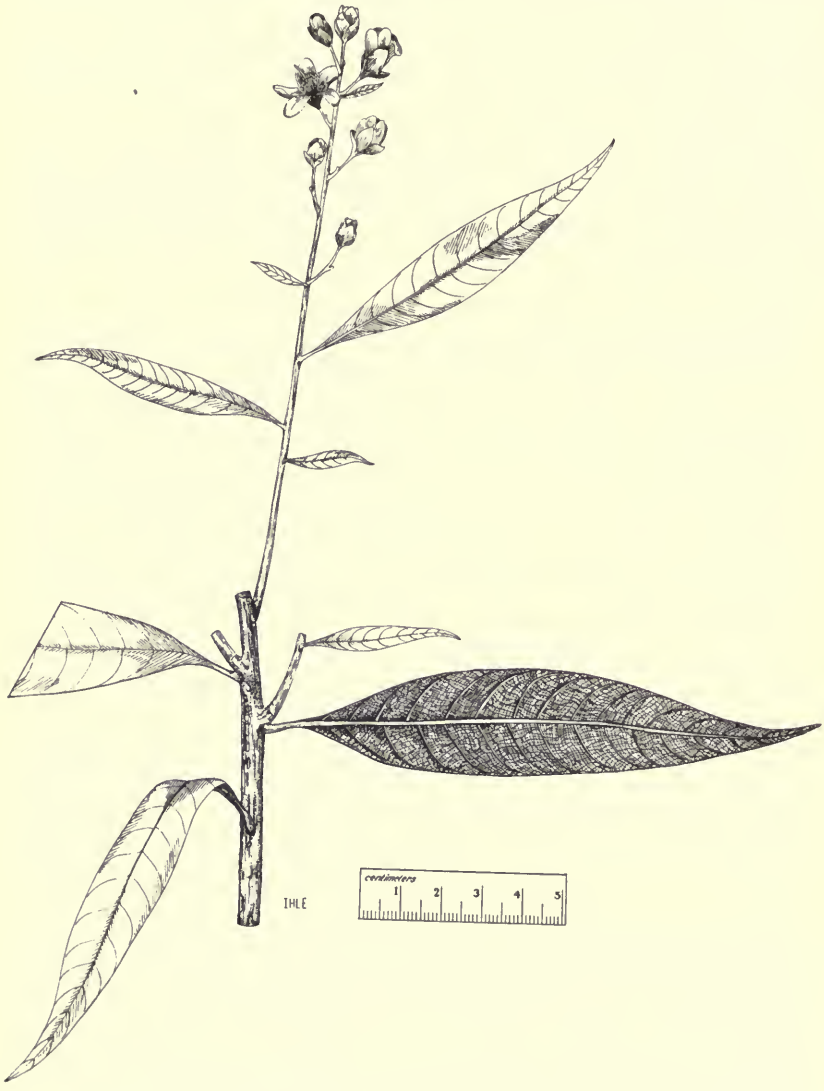


FIGURE 81

Mahurea sororopantepuiana

Habit of flowering branch (X 3/5).

cinerascentibus 4-5 mm. longis 6-10 mm. latis; petalis viridi-albidis vel ad apicem rosaceis 3.5-4 cm. longis 3-3.5 cm. latis; staminum phalangibus 5-andris 3 cm. longis; ovario 1.5 cm. longo; stylo 8-9 mm. longo; fructu cernuo asymmetrico cinerascenti vel glaucescenti monosperma ovoideo-conico 7 cm. longo 5 cm. diametro.

Type in herb. Chi. Nat. Hist. Mus., collected on steep wooded slopes just below dry ridge and shrubby growth, southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 59985*, "tree 50-60 feet tall; leaves coriaceous, dark green above, pale dull green below; petals greenish-white except for pale pink around tip; fruit not edible."

The following cotypes, also collected in the state of Bolívar and deposited in herb. Chi. Nat. Hist. Mus., are forested sandstone south-facing slopes between plateau portion and "Cave Camp," Ptari-tepuí, alt. 1700-1800 m., November 1, 1944, *Steyermark 59720*, "tree 50 feet tall; leaves coriaceous-chartaceous, dark green above, dull pale green below; petals white tinged at base pale green; sepals dull gray green; fruit pendent, asymmetrical, gray green or covered with gray-glaucous bloom, fleshy, 1-seeded; fleshy mesocarp pale greenish with pale greenish yellow resin-like portions;" scrubby forest on rocky open portion of Plateau on southeast-facing slopes, Ptari-tepuí, alt. 1600 m., November 1, 1944, *Steyermark 59628*, "small tree 25 feet tall; leaves erect, coriaceous, dark green above, pale green below; sepals dull gray green, margined buff brown; petals greenish-white; filaments and stigmas pale green."

Local name: "wa-kami-yek (Taurepan); palo de hacha (Spanish)."

This tree is one of the common ones found in the lesser story of the forest on the shoulders of Ptari-tepui. Its strikingly showy flowers are very arresting and resemble little *Magnolia* blossoms, similar to those of *M. virginiana* of the United States. This new species differs from *M. intermedia* Engl. in the broader and shorter petals, shorter sepals, and shorter phalanges.

Steyermark 59628 has the lower surface of most of the leaves lacking lateral nerves, whereas *Steyermark 59985* and *59720* have the lower surface of most of the leaves more manifestly nerved.

Moronobea ptaritepuiana forma **rosea** Steyermark, f. nov.

A typo differt floribus paullo minoribus et petalis extus roseis.

Type in herb. Chi. Nat. Hist. Mus., collected in woods, summit of Carrao-tepuí, state of Bolívar, alt. 2470-2500 m., December 7, 1944, *Julian A. Steyermark 60892*, "tree 20-25 feet tall; leaves coriaceous, dark green above, dull paler green below; petals deep rose without; pedicel erect, purple."

The deep rose color of the petals on the outer surface distinguishes this from the more commonly encountered greenish-white of the species, which at most is tinged with pinkish around the tip of the petals.

Oedematopus ptaritepuiensis Steyermark, sp. nov.

Frutex vel arbor epiphytico vel semi-epiphytico 13-metralis; ramulis novellis subtetragonis; foliis coriaceis petiolatis, petiolis 7-14 mm. longis; laminis oblongo-obovatis vel obovatis apice rotundatis vel obtusis interdum emarginatis basi cuneatis acutis vel subobtusis 5-8.5 cm. longis 2-5 cm. latis, nervis lateralibus numerosis adscendentibus; inflorescentiis bi-trichotomis 9-15-floris, ramulis 5-13 mm. longis; bracteis suborbiculari-ovatis apice obtusis vel subacutis 1.5-2 mm. longis; floribus masculis: sepalis 4 decussatis cucullatis orbicularibus, duobus exterioribus 2.5 mm. longis 4.5 mm. latis, interioribus 3.5-4 mm. longis 4 mm. latis; petalis 4 orbicularibus duobus exterioribus 4 mm. longis 4 mm. latis, interioribus ligulato-oblongis apice truncatis vel rotundatis 5 mm. longis 2.5 mm. latis; staminibus 8; filamentis latis dilatatis 1.2-1.5 mm. longis 0.7-0.8 mm. latis; antheris 1.2-1.3 mm. longis 0.8-0.9 mm. latis; floribus foemineis: sepalis 4; petalis 4; staminodiis 6; ovario 6-loculari; ovulis 4 vel ultra in quoque loculo.

Type (staminate plant) in herb. Chi. Nat. Hist. Mus., collected on forested sandstone south-facing slopes between plateau portion and "Cave Camp," Ptari-tepuí, state of Bolívar, alt. 1700-1800 m., November 1, 1944, *Julian A. Steyermark 59719*, "semi-epiphytic climbing shrub attached to *59720;* leaves coriaceous, deep green above, paler green beneath; petals creamy white; sepals and outer bracts pale green, the lower tinged with dull red; petioles at base dull purple."

Cotypes (pistillate) in herb. Chi. Nat. Hist. Mus., collected in dense forest, at base of cerro along Río Karuai, Ptari-tepuí, alt. 1220 m., November 27, 1944, *Steyermark 60640*, "epiphytic tree 40 feet tall; leaves coriaceous, deep green above, dull green below;" and, scrubby woods, vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and Sororopán-tepuí, alt. 1615 m., November 15-17, 1944, *Steyermark 60260*, "tree 40 feet tall; leaves coriaceous, deep green above, dull green below; calyx pale green as are perianth segments."

Local name: "tari-yek."

It is questionable whether this should be treated as a distinct species or as a variety of the recently published *O. quadratus* Maguire. Like that species it possesses 8 stamens in the staminate flowers and a 6-celled ovary in the pistillate flowers, and the measurements of floral parts are likewise similar. It differs from *O. quadratus* in having 6 instead of 2-4 staminodia in the pistillate flower, 4 or more ovules in each cell of the ovary of the pistillate flower, longer anthers and smaller sepals in the staminate flowers, and different measurements in the size of the staminate petals.

It is apparently intermediate between *O. quadratus* and *O. duidae* Gleason. From *O. duidae* it is distinguished by the larger leaves and dilated thicker filaments. The broad filament differentiates it from *O. obovatus* (Spruce) Pl. & Tr. and *O. octandrus* (Poepp. & Endl.) Pl. & Tr., while the 8 stamens distinguishes it from *O. dodecandrus* Planch.

Tovomita angustata Steyermark, sp. nov.

Arbor 8-metralis; ramulorum internodiis 6-8 mm. longis; foliis ad apices ramulorum congestis coriaceis decurrentibus sessilibus; laminis oblanceolatis apice acutis basi longicuneatis 15-33 cm. longis supra medium 3-6 cm. latis, costa media utrinque prominenti, nervis lateralibus numerosis patentibus supra tantum paullo manifestis; inflorescentia laxe trichotoma 9-flora, ramulis divaricatis 2.8-4 cm. longis; bracteis triangulari-ovatis acuminatis 2-3 mm. longis; pedicellis 9-10 mm. longis; floribus masculis: sepalis 4 exterioribus orbiculari-rotundatis arcuato-cucullatis 5 mm. longis 5 mm. latis; petalis orbiculari-rotundatis 4 mm. longis 4 mm. latis; staminibus numerosis; antheris staminum subglobosis vel late oblongis 0.3-0.4 mm. longis; filamentis 2.5-3 mm. longis (Fig. 82).

Type in herb. Chi. Nat. Hist. Mus., collected in wooded ravine below edge of mesa along mesa escarpment between Santa Teresita de Kavanayén and wooded quebrada about 8 kilometers northwest of Kavanayén, state of Bolivar, alt. 1220 m., November 23, 1944, *Julian A. Steyermark 60475*, "small tree 25 feet tall; leaves at tips of branches, coriaceous, dark green above with dull green below; rachis pale green; flowers greenish-white."

Local name: "wa-cami-yek."

The arching branches near the base of the tree trunk are used for bows by the native inhabitants.

This species is most closely related to *T. Weddelliana* Pl. & Tr. of Bolivia and to *T. longicuneata* Engl. of Peru, from which it is distinguished by the much longer leaves which are narrower and more attenuate at the base, more diffusely and fewer-flowered staminate inflorescence, and larger sepals.

Tovomita atropurpurea Steyermark, sp. nov.

Arbor 8-metralis; foliis chartaceo-subcoriaceis petiolatis, petiolis crassiusculis 1-2 cm. longis; laminis elliptico-oblongis vel lanceolato-ellipticis apice obtusis vel obtusiusculis basi rotundatis vel obtusis 6-19 cm. longis 1.5-8 cm. latis glabris, utrinque valde reticulato-venosis costa media utrinque prominenti, nervis lateralibus utroque 10-13 arcuato-adscendentibus; inflorescentia brevi terminali 1-3-flora; floribus congestis subumbellatis; floribus foemineis: pedicellis crassis 5-8 mm. longis; sepalis 4 late orbiculari-ovatis apice rotundatis 7-9 mm. longis 6.5-8 mm. latis; petalis 7-8 purpureo-rubris oblongis apice rotundatis 8-9 mm. longis 3-4 mm. latis; staminibus numerosis 3-seriatis purpureo-rubris; stigmatibus rubris 4; fructu pyriformi.

Type (pistillate plant) in herb. Chi. Nat. Hist. Mus., collected in vicinity of "Misia Kathy Camp," southeast-facing slopes, Ptaritepui, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 59973*, "tree 25 feet tall; leaves chartaceous-subcoriaceous, dull green above, pale green below; petals spreading, dull purple-red; stigmas dull red; styles pale green; filaments and anthers purple-red; sepals pale green with dull rose margins."

Cotype (staminate plant) in herb. Chi. Nat. Hist. Mus., collected on southeast-facing slopes, Ptari-tepuí, alt. 1585-1600 m., November 10-11, 1944, *Steyermark 60010.*

Local name: "wacami-yek."

This species is well marked by the purple-red filaments, anthers, and petals. It is related to *T. Choisyana* Pl. & Tr. and *T. Spruceana* Pl. & Tr.

Tovomita duidae Steyermark, sp. nov.

Frutex 6.5-metralis; foliis firme membranaceis vel subcoriaceis petiolatis, petiolis 6-12 mm. longis; laminis lanceolato-ellipticis utrinque acuminatis 7.5-13 cm. longis 1.5-3.5 cm. latis glabris, costa media subtus prominente, nervis lateralibus utroque 5-6 arcuato-adscendentibus ante marginem anastomosantibus; inflorescentia terminali laxe 5-flora; pedicellis 5-6.5 mm. longis; floribus foemineis: sepalis 4 late oblongis apice rotundatis 4.5-5 mm. longis 2.5-3 mm. latis; petalis 4 late oblongis apice obtusis 3 mm. longis 1.5-2 mm. latis; staminodiis numerosis; stigmatibus 4.

Type in herb. Chi. Nat. Hist. Mus., collected on southeastern-facing slopes along Caño Negro (tributary of Caño Iguapo), Territorio Federal Amazonas, alt. 305-1095 m., August 25-26, 1944, *Julian A. Steyermark 57975,* "shrub 20 feet tall; leaves firmly membranaceous to subcoriaceous, dark green above, dull green below; flowers pendent; calyx and pedicel pale green."

This species is related to *T. Schomburgkii* Pl. & Tr. and *T. brevistaminea* Engler, from which it differs in the narrower leaves. From *T. Riedeliana* Engler it differs in having the lateral nerves at a greater distance from one another, and from *T. acuminata* Engler it differs in the broader leaves. From *T. gracilipes* Pl. & Tr. it is differentiated by the longer leaves with more widely spaced, curving principal lateral nerves and in the floral characters.

ELATINACEAE

Elatine Fassettiana Steyermark, sp. nov.

Herba glabra humifusa; caulibus erectis crassiusculis 1-3 cm. altis; internodiis 3-4 mm. longis; foliis elliptico-oblongis vel obovatis apice rotundatis basi subobtusis 3.8-4.2 mm. longis 2.2-2.5 mm. latis; stipulis lanceolatis acuminatis 1.7 mm. longis; floribus axillaribus solitariis; pedunculis 0.5-1.3 mm. longis; sepalis 3 ovato-oblongis apice obtusis vel rotundatis 1 mm. longis prope basin 0.7 mm. latis; petalis late elliptico-oblongis apice rotundatis 1.5-1.6 mm. longis 1 mm. latis; staminibus 3; filamentis 1 mm. longis; antheris suborbicularibus 0.15 mm. longis; carpellis 3; seminibus castaneis vel stramineis oblongis leviter curvatis concavo-convexis vel teretibus utrinque rotundatis vel uno extremo obtuse subapiculato 0.5-0.7 mm. longis 0.3-0.4 mm. latis valde scrobiculatis, testa alveolis hexagonalibus utroque 6-7-seriatis instructa, una quoque serie longitudinali 12-14 alveolos habenti (Fig. 83).

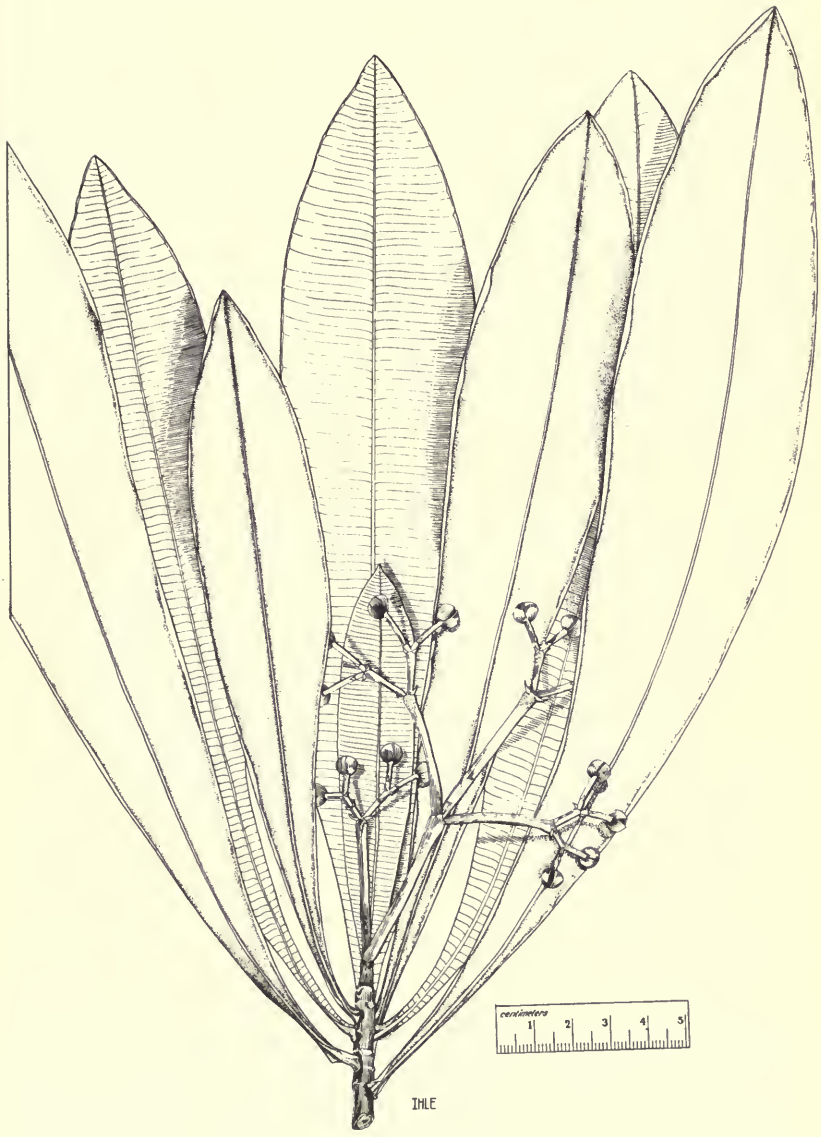


FIGURE 82

Tovomita angustata

Habit of flowering branch (X ½).

Type in herb. Chi. Nat. Hist. Mus., collected near upper limit of páramo, around small lake between Chachopa and Los Apartaderos, near El Aguila, state of Mérida, alt. 3960 m., April 16, 1944, *Julian A. Steyermark 55905.*

This species is named in honor of Dr. Norman C. Fassett, Professor of Botany of the University of Wisconsin, who has made important contributions to the study of North American *Elatine* and other aquatics. It differs from *E. chilensis* Gray, *E. minima* (Nutt.) Fisch. & Meyer, and *E. triandra* Schkuhr, in the pedicellate flowers. From *E. peruviana* Baehni and Macbride it may be distinguished by the shorter seeds, obtuse or rounded apex of the leaves which are not attenuate at the base, in the rounded sepals and petals, and in the shorter pedicellate flowers. From *E. triandra* var. *andina* Fassett it differs in the pedicellate flowers, different leaf shape, and broader seeds. In the proportion of the seed it is similar to *E. triandra* var. *brachysperma* (Gray) Fassett, but has a different type of marking. Like *E. triandra* and varieties, the pits are sexagonal and their ends extend between the ends of pits in adjacent rows.

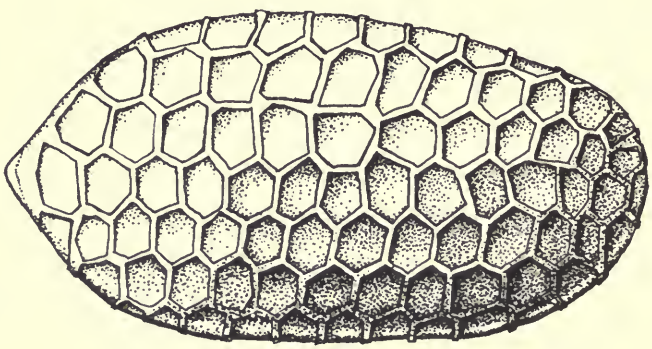


FIGURE 83
Elatine Fassettiana Steyermark
Seed (X 141)

CANELLACEAE

Cinnamodendron venezuelense Steyermark, sp. nov.

Arbor 10-20-metralis; ramulorum internodiis 1.5-2.5 cm. longis; foliis firme membranaceo-chartaceis petiolatis, petiolis 5-7 mm. longis supra canaliculatis, laminis supra lucidis atro-viridibus late ellipticis utrinque acutis 6.5-11 cm. longis 3.5-5.5 cm. latis integerrimis, costa media subtus subprominenti, nervis lateralibus utroque 9-12 inconspicuis laxe reticulatis; racemis axillaribus 1-4-floris; pedicellis adscendentibus 4-7 mm. longis; sepalis 3 imbricatis suborbicularibus apice rotundatis ciliolatis 3 mm. longis 3 mm. latis; petalis 5 imbricatis atrosanguineis crassiusculis exterioribus

late obovato-oblongis apice rotundatis, 6.5-7 mm. longis 5.5 mm. latis, interioribus obovatis apice rotundatis 4 mm. longis 2.5 mm. latis; squamis 5 obovato-oblongis apice rotundatis suberosis; tubo staminali 10-lobulato, antheris 10 longitrorsum birimosis linearioblongis 2 mm. longis, connectivo subcarnoso papillato emarginato; ovario 1-loculari oblongo-elliptico 4.5-5 mm. longo 2 mm. crasso, stigmate truncato-capitato; stylo nullo; placentis 2 parietalibus, medio ovula 2 collateralia gerentibus; ovulis 4-5 anatropis; seminibus 3-4 (Fig. 84).

Type in herb. Chi. Nat. Hist. Mus., collected on forested slopes of mountain, on rocky limestone boulder slope at base of bluff, on property of Juan Morocoima, southwest of Caripe, along Quebrada Colorado Grande, state of Monagas, alt. 850-1350 m., April 9, 1945, *Julian A. Steyermark 61950* (2 sheets), "tree 30-60 feet tall; dominant part of understory; petals blood red; staminodia 5, rose-red or pinkish; anthers creamy yellow; staminal column creamy; ovary deep green and shining; calyx dull green; fruit green; leaves firmly membranaceous-chartaceous, dark green and shining above, dull pale green below."

This is the first record of the genus for Venezuela. It is distinguished from *C. axillare* (Nees & Mart.) Endl. of Brazil by the larger stamens and thinner leaves, which lack the conspicuous open impressed areolae of the lower surface found in that species. From *C. tenuifolium* Uitt. of Dutch Guiana it differs in the larger flowers and smaller leaves.

VIOLACEAE

Viola venezuelensis Steyermark, sp. nov.

Herba perennis tenerrima humilis; caulibus tenuibus prostratis procumbentibusque 2.5-6 cm. longis, dense lobatis in lineis incurvato-puberulis, internodiis 1-13 mm. longis; stipulis oblique lanceolatis apice longe cuspidatis 1.2-1.3 mm. longis 0.4 mm. latis marginibus subintegerrimis vel uno latere parce repandis, subcarinatis glabris, carina dimidio inferiore hispidula excepto; foliis oppositis vel alternis firme membranaceis ovalibus vel oblongo-ellipticis apice rotundatis vel subacutis 5-8 mm. longis 2-5 mm. latis basi cuneatis in petiolum decurrentibus utrinque minutissime granuloso-papillatis adversus apicem minute hispidulis ceterum glabris, marginibus obscure crenulato-serrulatis, serraturis utroque 2-3; pedunculis axillaribus solitariis foliis longioribus tenuissimis 7-13 mm. longis in lineis incurvato-puberulis; floribus albis; sepalis oblongo-lanceolatis vel oblongis apice rotundatis vel obtusis apiculatis 1.5-1.6 mm. longis 0.6-0.8 mm. latis carinatis; petalis albis; petalis duobus superioribus minusculis oblongo-oblanceolatis apice subacutis 1.5 mm. longis 0.8 mm. latis; petalis duobus lateralibus subreniformi-pediformibus 2 mm. longis 1 mm. latis; petalo infimo 3.8 mm. longo ecalcarato naviculari, dimidio superiore subito dilatato emarginato, unguiculato, ungue 2 mm. longo 1.2 mm. lato, dimidio superiore 1.5 mm. longo 2.8 mm. lato, extus puberulo; antheris suborbicularibus 1 mm. longis 1

mm. latis, appendicibus connectivi ovato-oblongis apice rotundatis vel obtusis 1 mm. longis 1 mm. latis; filamentis usque ad 1.7 mm. longis; pistillo 1.3 mm. longo; stylo 0.5 mm. vel ultro basi curvato parte superiore rostellata, rostella oblique producta; ovario glabro; capsula subglobosa 4 mm. longa 3 mm. diametro glabra; seminibus nigrescentibus ovoideis apice angustatis obtusis 1.7 mm. longis 1.3 mm. diametro reticulatis (Fig. 85).

Type in herb. Chi. Nat. Hist. Mus., collected on dry top of páramo, Páramo de la Negra, between Bailadores and La Grita, state of Mérida, alt. 2745-3045 m., July 7, 1944, *Julian A. Steyermark 57077*, "stems prostrate; petals white."

This is a very distinct species apparently belonging to Sect. *Leptidium* Ging., related to such species as *V. Weddellii* Becker and *V. Dombeyana* DC. of Peru, and to *V. veronicaefolia* Pl. & Lindl. of the Andes. It is well characterized by the very minute flowers only 3.2 mm. long, the small capsules with few blackish seeds, the subentire lanceolate stipules, the incurved puberulous lines of pubescence of the stems and peduncles, the elongate peduncles surpassing the leaves, the remotely crenulate-serrulate small leaves, and the prostrate stems.

FLACOURTIACEAE

Banara larensis Steyermark, sp. nov.

Arbor, ramulis teretibus cano-tomentellis; foliis chartaceo-membranaceis petiolatis, petiolis 2-2.5 mm. longis cano-tomentosis; laminis elliptico-lanceolatis apice obtuse longe acuminatis basi valde inaequilateralibus uno latere oblique rotundatis alter cuneatim angustatis 5-11 cm. longis 1.5-2.7 cm. latis, supra plerumque glabris costa media puberula excepto subtus albidis molliter stellato-tomentellis, marginibus remote obtuse glanduloso-dentatis, dentibus calloso-obtusis utroque 9-14, 0.5-0.75 mm. altis 2-8 mm. distantibus, nervis primariis e basi 3-4, secundariis lateralibus utroque 3-6 adscendentibus ante marginem anastomosantibus; paniculis terminalibus bracteatis 3-4.5 cm. longis densifloris; pedunculis 9-17 mm. longis cano-stellato-tomentellis, rhachi stellato-tomentosa; pedicellis fructiferis 3.5-4.5 mm. longis dense stellato-tomentellis; bracteis setaceis 2-2.5 mm. longis dense stellato-tomentosis; calycis laciniis 6, extus dense cano-stellato-tomentellis, tribus exterioribus ovatis acutis 2-2.1 mm. longis 1.1-1.2 mm. latis, tribus interioribus late ovatis vel ovalibus obtusis scariosis 2.5 mm. longis 2 mm. latis; petalis nullis; staminibus 24-30; filamentis filiformibus glabris; antheris 0.2-0.3 mm. longis; ovario ovoideo glabro; stylo 1.5 mm. longo glabro; stigmate punctiformi; fructu (immaturo) subgloboso 5 mm. longo glabro.

Type in herb. Chi. Nat. Hist. Mus., collected on trail between Las Sabanetas, Los Aposentos, and Buenos Aires, state of Lara, alt. 1675-2430 m., February 10, 1944, *Julian A. Steyermark 55424*, "leaves white below, rich green above."

Local name: "ciruela."

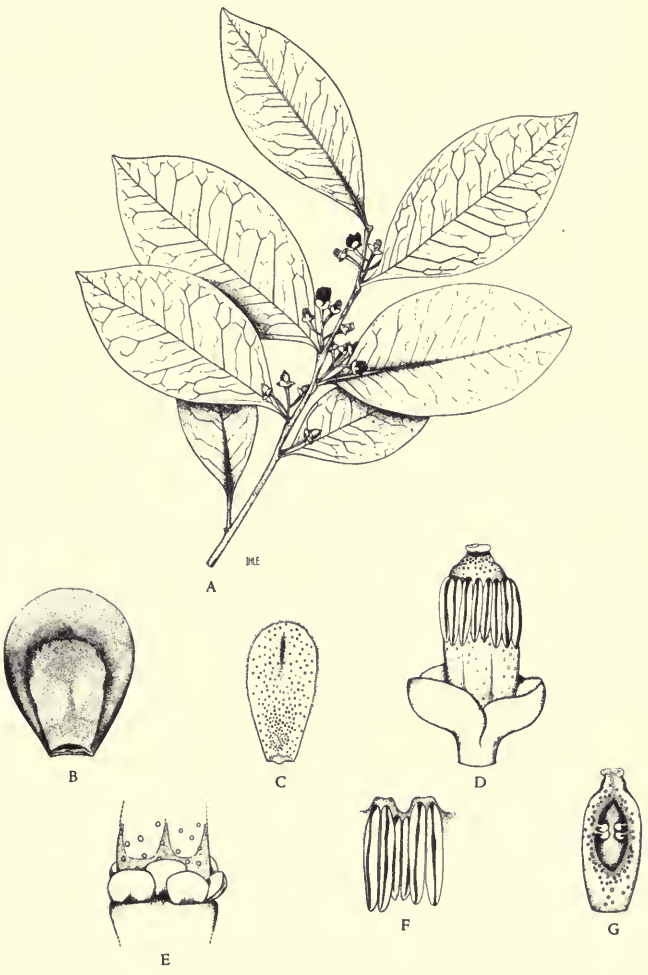


FIGURE 84

Cinnamodendron venezuelense

A, Habit of flowering branch (X ½); B, Outer petal (X 5); C, Inner petal (X 5); D, Petals removed, showing calyx, androecium, and gynoecium (X 5); E, Glands at base of pistil (X 5); F, Portion of stamens (X 5); G, Pistil cut vertically (X 5).

This species is related to *B. glauca* (H.B.K.) Benth. of the Colombian Andes, from which it differs in the narrower elliptic-lanceolate leaves which are whiter, more densely stellate-tomentulose on the lower surface, and more densely stellate-tomentose on the peduncles, pedicels, and calyx lobes. The calyx lobes of *B. larensis* are larger than in *B. glauca*.

Banara paucinervosa Steyermark, sp. nov.

Frutex 8-metralis; ramulis teretibus lenticelloso-punctatis glabris, internodiis 2.5-5 cm. longis; foliis chartaceo-membranaceis petiolatis, petiolis 6-7 mm. longis glabris apice eglandulosis; laminis elliptico-oblongis apice acutis vel subobtusis basi rotundatis vel obtusis 14-23 cm. longis 6.5-9.3 cm. latis utrinque glabris, marginibus subregulariter crenato-serratis, dentibus calloso-obtusis utroque 20-35, 1-1.5 mm. altis 4.5-10 mm. distantibus, nervis lateralibus utroque 6-7 valde adscendentibus ante marginem anastomosantibus inferioribus 0.5-1.3 cm. distantibus caeteris 3.5-5.5 cm. distantibus, utrinque venis venulisque laxe reticulatis supra reticulo prominenti; inflorescentia axillari vel terminali subfasciculata 2.5-4.5 cm. longa 2.5-5 cm. lata 4-7-floris, rhachi minute puberulenti; pedicellis rubris 9-18 mm. longis minute puberulentibus; bracteis ovatis subobtusis vel subacutis 2 mm. longis minute puberulentibus; sepalis 3 suborbicularibus apice rotundatis 4-5 mm. longis 3.5-5 mm. latis extus parce minute puberulentibus ciliolatis sub fructu reflexis persistentibus; petalis suborbiculari-obovatis apice subobtusis supra medium eroso-dentatis 5-6 mm. longis 4-4.5 mm. latis minute puberulentibus; staminibus indefinitis, filamentis albidis filiformibus glabris; antheris suborbicularibus 0.5 mm. longis; ovario rubro ovoideo nigrescenti 3 mm. longo glabro in stylum 1.5 mm. longum abeunti; placentis parietalibus tribus; stigmate rubro capitato-discoideo.

Type in herb. Chi. Nat. Hist. Mus., collected along stream in woods above Las Cuadras, along Quebrada Molino, north of Torondoy, state of Mérida, alt. 1820-2255 m., March 27, 1944, *Julian A. Steyermark 55824*, "shrub 25 feet tall; fruit dull red as are pedicels; perianth pale green; filaments white; ovary dull red as is upper style and stigma; lower part of style pale green; leaves chartaceous-membranaceous, rich green above, pale green below."

This species is characterized by the relatively short few-flowered axillary inflorescences and glabrous leaves with 6-7 pairs of relatively distantly-spaced lateral nerves. It differs from *B. guianensis* Aubl. and *B. nitida* Spruce in the eglandular petioles, leaf-blades with fewer and more distant lateral nerves, and fewer-flowered, shorter, axillary inflorescences.

Casearia tachirensis Steyermark, sp. nov.

Frutex 5-metralis; ramulis glabris vel parce pilosulis, internodiis 6-13 mm. longis; foliis confertis subcoriaceis breviter petiolis vel subsessilibus, petiolis ca. 1 mm. longis glabris vel pilosulis; laminis elliptico-lanceolatis vel elliptico-oblongis apice acuminatis basin versus angustatis basi obtusis subsymmetricis 5.5-11.5 cm.

longis 2-4 cm. latis, supra plerumque glabris subtus glabris vel interdum parce minute pilosulis, marginibus subrevolutis inconspicue crebro crenulato-serrulatis, impunctatis vel parce punctatis subtus costa media atque nervis lateralibus manifestis, nervis lateralibus utroque 6-8 valde arcuato-adscendentibus anastomosantibus fasciculis florum multifloris in axilla foliorum sessilibus, pedicellis sub anthesi 2.5-3 mm. longis dense cano-puberulis; bracteis bracteolisque suborbicularibus 1-1.5 mm. longis scariosis extus puberulis; calyce 5.5-6.5 mm. longo, lobis late oblongis vel ovato-oblongis apice obtusis, extus cano-puberulis intus dense cano-tomentellis sub anthesi erecto-adscendentibus 3.5-4.5 mm. longis 1.75 mm. latis marginibus crassiusculo-involutis, basi in tubum brevem 2 mm. longum; staminibus 10, filamentis 2.5-2.75 mm. longis glabris; antheris subgloboso-didymis 0.75 mm. longis glabris; disci processis cum staminibus alternantibus inaequalibus, filamento dimidio brevioribus anguste oblongis obtusis 1-2 mm. longis dense puberulis; ovario hispidulo vel hirtello; stylo 2.5 mm. longo parce puberulo; stigmate capitato; ovulis numerosis, placentis 3, pauciovulatis; fructu non visi.

Type in herb. Chi. Nat. Hist. Mus., collected in thickets along quebrada, above Betania, at base of Páramo de Tamá, state of Táchira, alt. 2285-2430 m., July 14, 1944, *Julian A. Steyermark 57276*, "shrub 15 feet tall; leaves subcoriaceous, dark green above and shining, dull green below; perianth pale green with white margins on lobes; filaments buff creamy; anthers golden."

This species is a member of section *Pitumba*, and is distinguished by the combination of obscurely or non-punctate, shallowly crenulate, mostly glabrous, shortly petiolate leaves crowded on short internodes, 10 glabrous stamens, capitate stigma, pilose ovary and style, and rather large erect-ascending calyx lobes which are densely puberulent within and without.

Hasseltia monagensis Steyermark, sp. nov.

Arbor 12-20-metralis; ramulis vetustioribus parce strigilloso-pubescentibus vel glabrescentibus; foliis firme membranaceis vel chartaceo-membranaceis petiolatis, petiolis 1.5-4 cm. longis supra canaliculatis hirsutulis pilis adscendentibus vel patentibus; laminis late ellipticis vel oblongo-ellipticis apicem versus sensim attenuatis apice subobtuse basi biglanduliferis subito cuneatis 8-15 cm. longis 3.5-8.5 cm. latis, e basi manifeste trinerviis, marginibus integerrimis vel remote inconspicue crenulato-serrulatis, serraturis 0.5 mm. altis 5-10 mm. distantibus, nervis principalibus 3 prominentibus lateralibus valde adscendentibus, venis venulisque valde transversim reticulatis, supra glabris subtus 3 nervis principalibus et 2-3 jugis nervorum lateralium valde pilosis caeterum glabris; stipulis caducissimis; paniculis thyrsoideis terminalibus floribundis in anthesi 6-9 cm. longis 10-18 cm. latis in fructu 15 cm. longis 15 cm. latis, ramis inferioribus 4-6 cm. longis plerumque adpresso-puberulis; pedicellis 6-8 mm. longis cinereo-tomentellis; sepalis 4 albidis ovatis obtusis 4-4.5 mm. longis 2-2.5 mm. latis utrinque griseo-

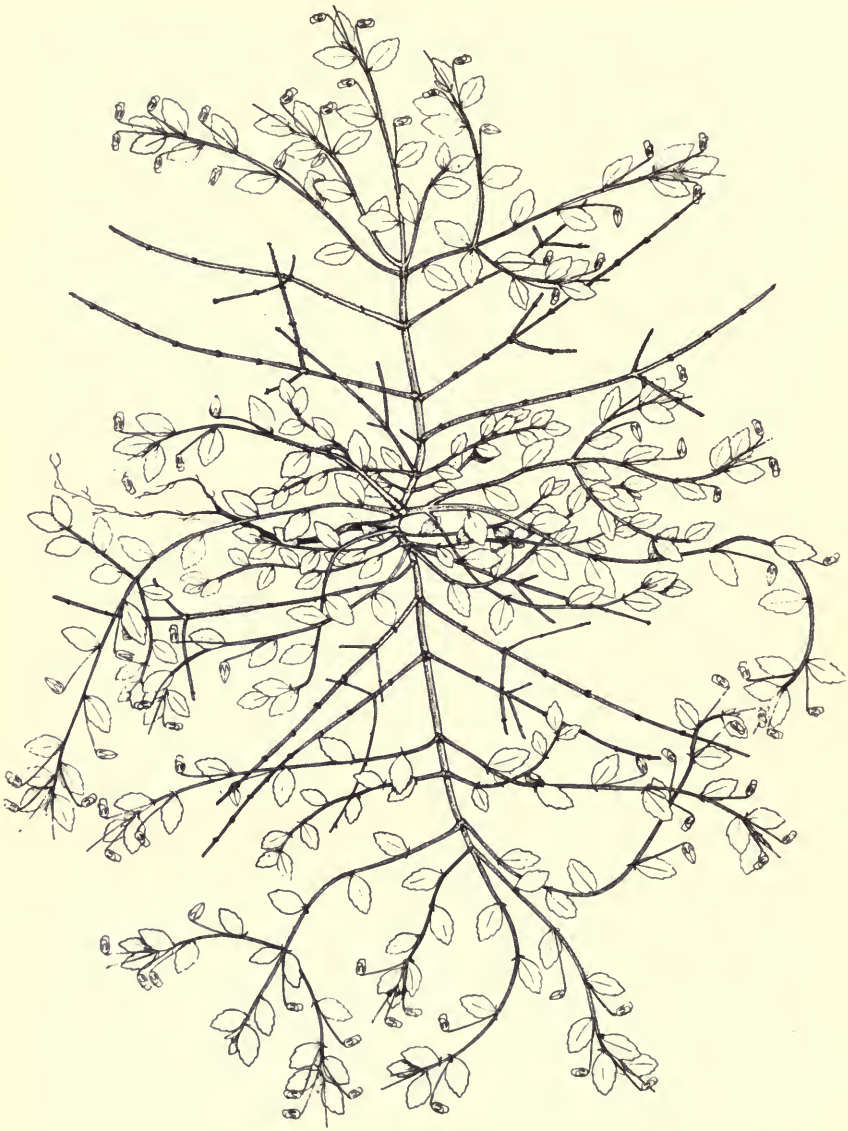


FIGURE 85–A
Viola venezuelensis
Habit of plant (X 1.25).

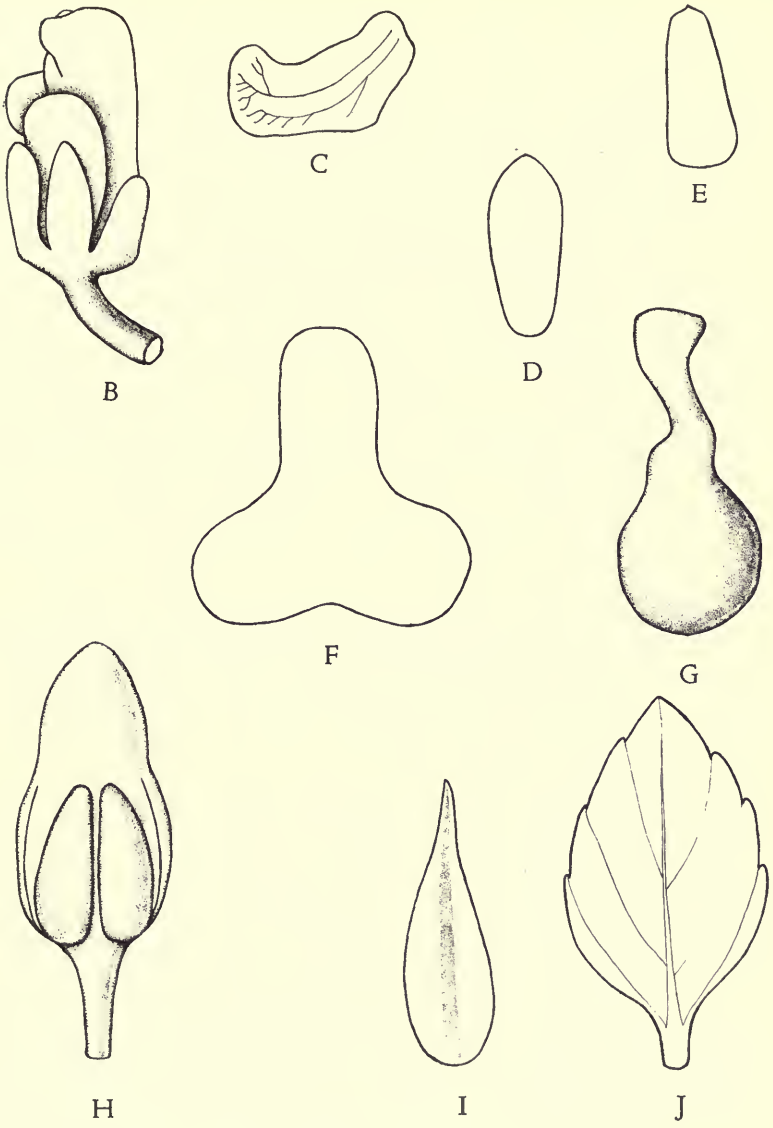


FIGURE 85–B-J

Viola venezuelensis

B, Flower in position, lateral view, with portion of pedicel attached (X 12); C, Lateral petal (X 13); D, Upper dorsal petal (X 16); E, Calyx lobe (X 14); F, Lowest petal (X 12); G, Pistil (X 21); H, Anther with portion of filament attached (X 21); I, Stipule (X 3); J, Leaf (X 6.3).

tomentellis; petalis 4 albidis oblongis apice rotundatis vel obtusis 4.25-4.5 mm. longis 2 mm. latis utrinque griseo-tomentellis; staminibus numerosis; antheris subglobosis 0.2 mm. longis 0.5 mm. latis; filamentis albidis capillaribus; ovario ovoideo glabro 2-loculari, placentis parietalibus 2 multiovulatis; stylo 1.75-2 mm. longo glabro; fructu (immaturo) pallido-viridi subgloboso glabro 6-7 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected at base of limestone bluffs, Cerro de la Cueva de Doña Anita, south of and bordering valley of Caripe, state of Monagas, alt. 1100-1200 m., April 7, 1945, *Julian A. Steyermark 61919*, "tree 40-60 feet tall; leaves chartaceous-membranaceous, deep dark green above, dull paler green below with prominent nerves below; flowers sweet-scented, creamy white; filaments white; staminodia at base deep orange; ovary pale green and shining."

Cotype (fruit) in herb. Chi. Nat. Hist. Mus., collected on Montaña de Aguacate, along Quebrada de Pajarral, tributary to Río Caripe, northeast of Alto de Aguacate, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 19, 1945, *Steyermark 62182*, "tree 35-40 feet tall; leaves firmly membranaceous, deep green above, dull green below; fruit pale green, globose; calyx lobes greenish-white; petals whitish."

This is the first record of the genus *Hasseltia* for Venezuela. It is distinguished by the combination of comparatively large flowers with 4 petals and 4 sepals, glabrous ovary, entire or subentire prominently 3-nerved reticulate leaf-blades, which are densely pilose on the 3 main nerves as well as the 2-3 pairs of additional lateral nerves.

Homalium anzoateguiensis Steyermark, sp. nov.

Arbor 20-36-metralis; ramulis juvenilibus dense pilosulis, vetustioribus glabris; foliis firme membranaceis petiolatis, petiolis 6-12 mm. longis utrinque pilosis; laminis late ellipticis vel oblongo-ellipticis apice obtuse acuminatis vel subobtusis basi rotundatis vel obtusis 7-13.5 cm. longis 3.5-6.5 cm. latis, marginibus valde vel inconspicue repando-crenatis, crenaturis 14-24, subtus molliter pilosis atque in axillis nervorum barbellatis supra per costam mediam et nervos laterales hirtellis vel parce puberulis ceterum parce puberulis vel glabrescentibus, nervis lateralibus utroque 7-9 adscendentibus ante marginem anastomosantibus; inflorescentia inferne paniculata supra medium racemosa 7-13.5 cm. longa axillari atque terminali, rhachi dense pilosa, ramulis inferioribus 6-10 mm. longis; floribus pedicellatis, pedicellis 2-4 mm. longis dense puberulis; bracteis subulatis 2-3 mm. longis; calycis tubo late turbinato 4.5-5 mm. longo 6 mm. diametro 6-sulcato griseo-puberulo, laciniis 6 lanceolatis vel oblongo-lanceolatis apice subacutis vel subobtusis 3.5 mm. longis 1.25-1.5 mm. latis utrinque puberulis; petalis 6 ovatis obtusis 4.25-4.5 mm. longis 2.5-3 mm. latis utrinque puberulis; glandulis transversim lunato-oblongis depressis 1.5 mm. longis puberulis; staminibus plerumque 18, in fasciculos triandros petalis superpositos distributis; filamentis infra medium pilosis, petalis

subaequilongis; stylis 3 subulatis glabris liberis; ovario depresso-conico griseo-puberulo.

Type in herb. Chi. Nat. Hist. Mus., collected in woods along Río León by Quebrada Danta, tributary to Río Neverí, northeast of Bergantín, state of Anzoátegui, alt. 500 m., February 20, 1945, *Julian A. Steyermark 60993*, "tree 80 feet tall; leaves firmly membranaceous, deep green above, dull green below; calyx buff."

Also collected along Río León, northeast of Bergantín, alt. 500 m., March 8, 1945, *Steyermark 61430*, "tree 60 feet tall."

Local name: "palo amarillo."

The mashed bark of this tree is reputed by the inhabitants of the region to be effective in treating a wound caused by the bite of the poisonous bushmaster snake. An infusion of the bark is also recommended to be taken internally after having been bitten by this snake.

This species is distinguished by the combination of pedicellate flowers, distinct styles, densely puberulous inflorescence, pedicels, petioles, and lower leaf surface.

Ryania casiquiarensis Steyermark, sp. nov.

Frutex vel arbor 5-metralis; ramulis dense stellato-hirsutis, pilis ad 1-1.5 mm. longis patentibus, foliis chartaceo-membranaceis petiolatis, petiolis 4-5 mm. longis molliter stellato-hirsutis, laminis late elliptico-oblongis apice subito cuspidato-acuminatis, acumine 0.5-0.7 mm. longo, basi obtusis vel subobtusis 16-20 cm. longis 7-8 cm. latis integerrimis vel subintegerrimis supra praesertim per costam medium atque nervos laterales hirsutulis caeterum parce puberulis subtus praesertim costa media nervis lateralibus venulisque molliter stellato-pubescentibus, pilis patentibus, costa media et nervis lateralibus subtus prominentibus, nervis lateralibus utroque 8-11 arcuato-adscendentibus ante marginem anastomosantibus; floribus solitariis axillaribus sessilibus vel subsessilibus; sepalis deciduis anguste lanceolatis acuminatis ad 3.2 cm. longis 4 mm. latis intus glabris extus dense stellato-pilosis, pilis adscendentibus vel patentibus; staminibus numerosis; filamentis filiformibus glabris; antheris linearibus 2 mm. longis; stylo 18 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected at Capihuara, Alto Casiquiare, Territorio Federal Amazonas, alt. 118 m., May 25, 1942, *Llewelyn Williams 15564*, "arbol pequeño delgado, o arbusto alto de 5 m.; el fruto axilar y la corteza gris; la albura de color claro y el duramen delgado, rosado; en la selva de tierra firme; el fruto de de color bermejo en su madurez."

In Monachino's recent revision of *Ryania* (Lloydia 12, no. 1: 1-29. 1949), this new species would be inserted between *R. Spruceana* Monachino and *R. canescens* Eichl. It is characterized by the abundant soft stellate pubescence of the lower surface of the leaves, densely stellate-hirsute stems with spreading hairs, short anthers, sessile or subsessile flowers, and narrow sepals tomentulose on the outer surface.

LOASACEAE

Cajophora larensis Steyermark, sp. nov.

Herba 1-1.3-metralis; caulibus erectis sparse retrorsum hispidis 5-6 mm. diam., pilis 2.8-3 mm. longis; foliis ambitu triangulari-ovatis oppositis petiolatis, petiolis 12-21 cm. longis retrorsum hispidis; laminis supra atroviridibus palmatim tripartitis, foliolis lateralibus inferioribus ovatis vel elliptico-ovatis apice acuminatis basin versus angustatis grosse pinnatilobatis 9-11 cm. longis 6.5-7 cm. latis, lobis late ovatis mucronatis marginibus dentatis, lobo medio ambitu rhomboideo-elliptico 14-17 cm. longo 15-16 cm. lato utroque 4-lobato, lobis oblongo- vel ovato-lanceolatis acutis, infimis salientibus 6.5-7 cm. longis 3.5 cm. latis, aliis 1.5-6.5 cm. longis 1-2.5 cm. latis, lobis grosse dentatis, subtus ad costam mediam et nervos principales retrorsum hispidis aliter adpresso-pilosulis atque glandulis sessilibus obtectis, supra setis parce munitis et interdum glandulis sessilibus munitis; floribus 5-meris; calycis tubo 0.5 mm. alto 6 mm. diametro setis densissimis 2 mm. longis obtectis; calycis lobis triangulari-ovatis vel ovato-lanceolatis longe acuminatis 2.7 cm. longis 7-8 mm. latis integerrimis, utrinque setis hispidis obtectis; petalis 5 planis salmoneis oblanceolatis vel oblongo-oblanceolatis acuminatis bene evolutis 3.2 cm. longis 1.1 cm. latis extus setoso-pilosis secus costam densiuscule setosis, intus parce pilosulis; squamis a latere subrectis, visi saccato-convexis rhomboideo-oblongis extus papilloso-puberulis praesertim inferne, superne manifeste bialatis 14 mm. longis 6 mm. latis basi 9 mm. latis, alis ovoideis obtusis vel rotundatis 4 mm. longis 4-5 mm. latis, nervis 3, dorso filis nullis; staminodiis 2 interioribus squama majoribus subulatis acuminatis 16-17 mm. longis 0.2-1.5 mm. latis utrinque puberulis; staminibus ca. 45 bene evolutis 1.1-1.2 cm. longis; filamentis glabris; antheris lineari-oblongis 2.8-3 mm. longis glabris; stylo 12 mm. longo 1.5 mm. diametro, dense hirtello; ovario dense setuloso-hirtello; capsula non visa (Fig. 86).

Type in herb. Chi. Nat. Hist. Mus., collected with *Pilea* at base of shaded bluff, between Buenos Aires to Canyon of El Callado, above Humocaro Alto, state of Lara, alt. 2285-2740 m., February 12, 1944, *Julian A. Steyermark 55528*, "herb 3-4 feet tall; leaves dark green above, dull green below; petals dull brick-salmon."

Common name: "pringa moza."

The hairs on this plant sting badly and cause a severe itching sensation.

Although no capsules are at hand in the type material to indicate the manner of dehiscence, study of extant material would indicate that the species is congeneric with *Cajophora*, a genus previously unknown from Venezuela, rather than with *Loasa*.

This species is characterized by the opposite palmately tripartite leaves, more sparsely hispid stems, smaller flowers with plane oblanceolate acuminate petals, conspicuously winged scales without threads, and shorter stamens.

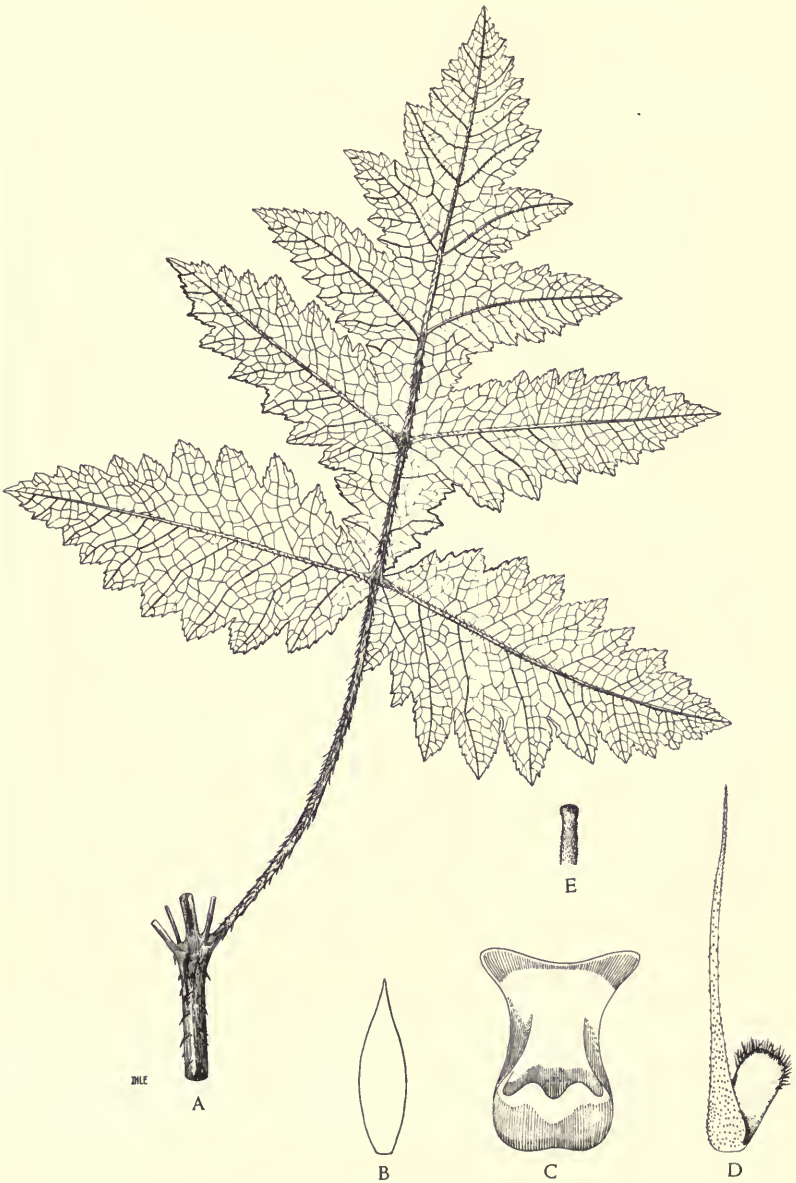


FIGURE 86

Cajophora larensis

A, Leaf (X 1/3); B, Petal (X 1); C, Scale (X 2.75); D, Staminodium (X 4.75).

Cajophora venezuelensis Steyermark, sp. nov.

Herba 1-1.3-metralis, caulibus laxe adscendentibus dense valdeque retrorsum hispidis, pilis 3-3.5 mm. longis; foliis ambitu triangulari-ovatis supremis alternis, inferioribus non visis, petiolatis, petiolis 4-6 cm. longis dense retrorsum hispidis; laminis valde rugosis palmatim tripartitis, foliolis lateralibus inferioribus ellipticis apice acuminatis basin versus angustatis pinnatilobatis 4.5-8 cm. longis 2.5-4 cm. latis, lobis late ovatis vel oblongo-lanceolatis mucronatis marginibus grosse crenato-dentatis, lobo medio ambitu rhomboideo-elliptico 8-14 cm. longo 6-12 cm. lato utroque 4-6-lobato, lobis oblongo-lanceolatis vel ovatis apice acutis vel acuminatis, infimis salientibus, 2.5-5.5 cm. longis 1-2.8 cm. latis, aliis 0.6-2.3 cm. longis 0.6-1.1 cm. latis, lobis grosse crenato-dentatis, subtus ad costam mediam et nervos principales retrorsum hispidis aliter ad venas cum pilis granulosis obtectis, supra setis parce munitis aliter adpresse pilosis et pilis granulosis obtectis; floribus 5-meris, apice caulis in monochasium 1-2-florum dispositis; pedicellis minimis; phyllis si adsunt euphylloideis; calycis tubo 1 cm. alto 2 cm. diam. setis densissimis 3-4 mm. longis obtectis; calycis lobis ovato-lanceolatis acutis 2.7 cm. longis 1.1 cm. latis integerrimis, utrinque setis hispidis 2-3 mm. longis atque pilis granulosis obtectis; petalis 5 planis salmoneo-aurantiacis oblongo-lanceolatis acutis bene evolutis 4.8 cm. longis 1.2 cm. latis basi 0.5 mm. latis extus densiuscule pilosis intus prope margines parce pilosis; squamis incrassatis a latere visis inferne incurvatis atque saccato-convexis superne subrectis rhomboideo-oblongis antice paullo late emarginatis lobis apicalibus late rotundatis, 22 mm. longis 12 mm. latis nervis 3, nervo medio supra basin ramosis, utrinsecus dense papillosis, dorso filis nullis; staminodiis 2 interioribus squama multo majoribus lineari-subulatis acuminatis 21 mm. longis 1 mm. latis utrinque papilloso-puberulis basi geniculatis densiter puberulis; staminibus 50-60 bene evolutis 3 cm. longis; filamentis filiformibus glabris; antheris oblongis 3 mm. longis glabris; stylo 23 mm. longo plerumque puberulo apicem versus parce puberulo vel glabro; ovario 14 mm. diametro pubescenti; capsula non visa (Fig. 87).

Type in herb. Chi. Nat. Hist. Mus., collected on rich steep northwest- and northeast-facing forested slopes above "La Isla," above Tabay, state of Mérida, alt. 2285-2745 m., May 18, 1944, *Julian A. Steyermark 56594*, "herb, sprawling, 3-4 feet tall; stinging-irritant hairs; leaves deeply rugose, dark green above, dull green below; sepals dull green; petals orange-salmon; filaments salmon."

This species is characterized by the alternate palmately tripartite rugose leaves with conspicuously crenate-dentate lobed leaflets, densely retrorsely hispid stems, and large flowers with plane oblong-lanceolate acute petals.

FIGURE 87

Cajophora venezuelensis

A, Leaf (X 2/3); B, Scale (X 2); C, Staminodium (X 1.3); D, Petal (X 2.6).

BEGONIACEAE[23]

Begonia laxa Smith & Schubert, sp. nov.

E fragmentis solum cognita, suffruticosa, laxa, ramosa, plus minusve decumbens (!Steyermark), glabra; caule flexuoso, sulcato; foliis transversis, ovatis vel ellipticis, breviter acutis, basi cordatis, 6 cm. longis, 3 cm. latis, obscure denticulatis, subcoriaceis, petiolis 2 cm. longis, stipulis deciduis, obovatis, 15 mm. longis, integris, tenuibus, ex sicco pallide brunneis; pedunculis axillaribus, 4 cm. longis; cymis verisimiliter unisexualibus, multifloris, 10 cm. diametro; bracteis deciduis, ignotis; pedicellis 4-10 mm. longis; floribus albis; tepalis masculinis 2, orbicularibus, 5 mm. diametro, integris; staminibus subliberis, antheris ellipticis, quam filamentis paulo brevioribus, connectivo producto, late rotundato; bracteolis femineis late ellipticis, ovarium subaequantibus, serratis; tepalis femineis 5, subaequalibus, ellipticis, apiculatis, 4.5 mm. longis, integris vel remote denticulatis; stylis 3, bipartitis, stigmatibus spiraliter cinctis; ovario 3-loculato, placentis bilamellatis; capsula ellipsoidea, acuta vel obtusa, 8 mm. longa, inaequaliter trialata, ala maxima 7 mm. lata, late ovata, alteris multo minoribus (Fig. 88).

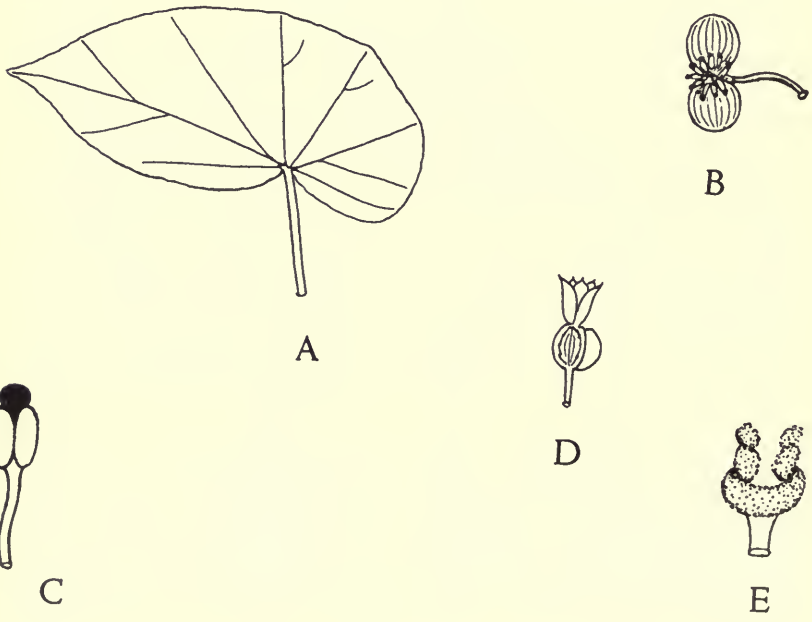


FIGURE 88

A, Leaf (X 2/5); B, Staminate flower (X 4/5); C, Stamen (X 4); D, Pistillate flower (X 4/5); Style (X 4).

[23]By Lyman B. Smith and Bernice G. Schubert

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Turumiquire, between eastern and western peaks, on summit following sandstone-covered knife-edge ridge, state of Sucre, alt. 2300-2500 m., May 8, 1945, *Julian A. Steyermark 62677.*

The leaves and staminate flowers of *B. laxa* are indistinguishable from those of *B. fagopyroides*, but its large serrate bracteoles and subequal pistillate tepals are markedly different. There is no organic connection between the staminate flowers and the section of the plant bearing leaves and pistillate flowers but we assume the collector is correct in associating them.

Begonia otophylla Smith & Schubert, sp. nov.

Herbacea, 15-24 dm. alta; caule plus minusve flexuoso, sulcato, mox glabro; foliis obliquis et valde asymmetricis, apice abrupte acuminatis, basi cordatis, alibi subregulariter rotundatis, 14-26 cm. longis, 7-16 cm. latis, inconspicue crenulato-denticulatis, membranaceis, utrinque sparse hispidis, petiolis 7-13 cm. longis, hispidis, apice pilis plus minusve in annulo aggregatis, stipulis deciduis, oblongis, 15 mm. longis, integris, paucinervatis, ex sicco pallido-viridibus, glabris; pedunculis axillaribus, gracilibus, 12-18 cm. longis, mox glabris; inflorescentiis cymosis, multifloris, ad 14 cm. diametro, glabris; bracteis persistentibus, minutis, lanceolatis vel ovatis, integris; pedicellis gracillimis, 8-12 mm. longis; tepalis masculinis 4, integris, albis, exterioribus late ovatis, acutis, 4 mm. longis, interioribus valde minoribus angustioribusque; staminibus liberis, antheris oblongis, cum filamentis subaequilongis, connectivo producto, obtuso; bracteolis femineis bracteis similibus, quam ovario multo brevioribus; tepalis femineis 5, ovatis, acuminatis, duobus exterioribus ca. 2 mm. longis, tribus interioribus subduplo majoribus; stylis 3, bi-vel pluripartitis, stigmatibus spiraliter cinctis; ovario 3-loculato, placentis integris; capsulis 5-6 mm. longis, plerumque inaequaliter trialatis, alis late ovatis, obtusis, alis duabus maximis subaequalibus, 3-4 mm. latis, altera subduplo minore vel tribus subaequalibus (Fig. 89).

Type in herb. Chi. Nat. Hist. Mus., collected in forest along northeast-facing quebrada tributary to Río Manzanares, between La Trinidad and ridge connecting Cerro de Diablo (western extension of southern peak of Cerro Turumiquire), state of Sucre, alt. 1300-1900 m., May 12, 1945, *Julian A. Steyermark 62758.*

Cotype in Gray Herb. and in herb. Chi. Nat. Hist. Mus., collected in dense forest along Río Cangrejo, tributary to Río Zumbador, northeast of Bergantín, state of Anzoátegui, alt. 500 m., February 24, 1945, *Steyermark 61167.*

Its persistent bracts and smaller outer pistillate petals indicate the close relationship of *B. otophylla* to *B. dichotoma* of Venezuela and *B. sulcata* of Columbia, while it is easily distinguished from them by its massed trichomes at the apex of the petiole and its capsule with two or three large wings.

Begonia pastoensis A. DC., var. **hirsutior** Smith & Schubert, var. nov.

Differt stipulis extus pubescentibus ciliatisque; inflorescentia stipitato-glandulosa.

Type in herb. Chi. Nat. Hist. Mus., collected between Los Corales and Las Cuadras, state of Mérida, alt. 1490-3210 m., March 25, 1944, *Julian A. Steyermark 55753.*

The typical variety is a native of Colombia and Ecuador.

Begonia sucrensis Smith & Schubert, sp. nov.

Herbacea, 9-12 dm. alta; caule subrecto vel geniculato, sulcato, glabro; foliis obliquis et valde asymmetricis, late ovatis vel ellipticis, abrupte acuminatis, basi cordatis, 8-11 cm. longis, 5-7 cm. latis, undulato-denticulatis, brevissime ciliatis, supra sparsissime hispidis, subtus glabris, petiolis ad 9 cm. longis, glabris sed apice annulo squamarum fimbriatarum vel squama unica auctis, stipulis deciduis, oblongis, apice rotundatis apiculatisque, 15 mm. longis, integris, paucinervatis, ex sicco pallido-viridibus, glabris; pedunculis axillaribus, ad 13 cm. longis; inflorescentiis cymosis, submultifloris, 8-12 cm. diametro, glabris; bracteis persistentibus, minutis, lanceolatis vel ovatis, integris; pedicellis gracillimis, 5-8 mm. longis; tepalis masculinis 4, integris, albis, exterioribus late ovatis, acutis, 3 mm. longis, interioribus late oblanceolatis, fere aequilongis; staminibus paucis, liberis, antheris oblongis, quam filamentis multo longioribus, connectivo producto, obtuso; bracteolis femineis bracteis similibus, quam ovario multo brevioribus; tepalis femineis 5, ovatis, acutis, duobus exterioribus ca. 1 mm. longis, tribus interioribus 2-3-plo majoribus; stylis 3, bipartitis, stigmatibus spiraliter cinctis; ovario 3-loculato, placentis integris vel paulo bipartitis; capsulis 7 mm. longis, inaequaliter trialatis, alis subtriangularibus, ala maxima 7-8 mm. lata, duobus alteris subduplo minoribus (Fig. 90).

Type in herb. Chi. Nat. Hist. Mus., collected in forest along northeast-facing quebrada tributary to Río Manzanares, between La Trinidad and ridge connecting Cerro de Diablo (western extension of southern peak of Cerro Turumiquire), state of Sucre, alt. 1300-1900 m., May 12, 1945, *Julian A. Steyermark 62761; Steyermark 62760* is an additional collection.

Like *B. otophylla* described above, *B. sucrensis* appears closely related to *B. dichotoma* and *B. sulcata.* With simple and bipartite placentae occurring in the same plant in *B. sucrensis,* the value of such a character seems very doubtful, although DeCandolle used it to place *B. dichotoma* and *B. sulcata* in separate sections. We feel that the important characters are the persistent bracts and the small size of the two outer pistillate petals relative to the three inner ones.

The following key shows the relationship of the four species:

1. Capsule bearing one large wing and two much smaller ones.
   2. Petiole lacking any ring of trichomes or scales at its summit.
      3. Smaller capsule-wings triangular-ovate. .... *B. dichotoma.*

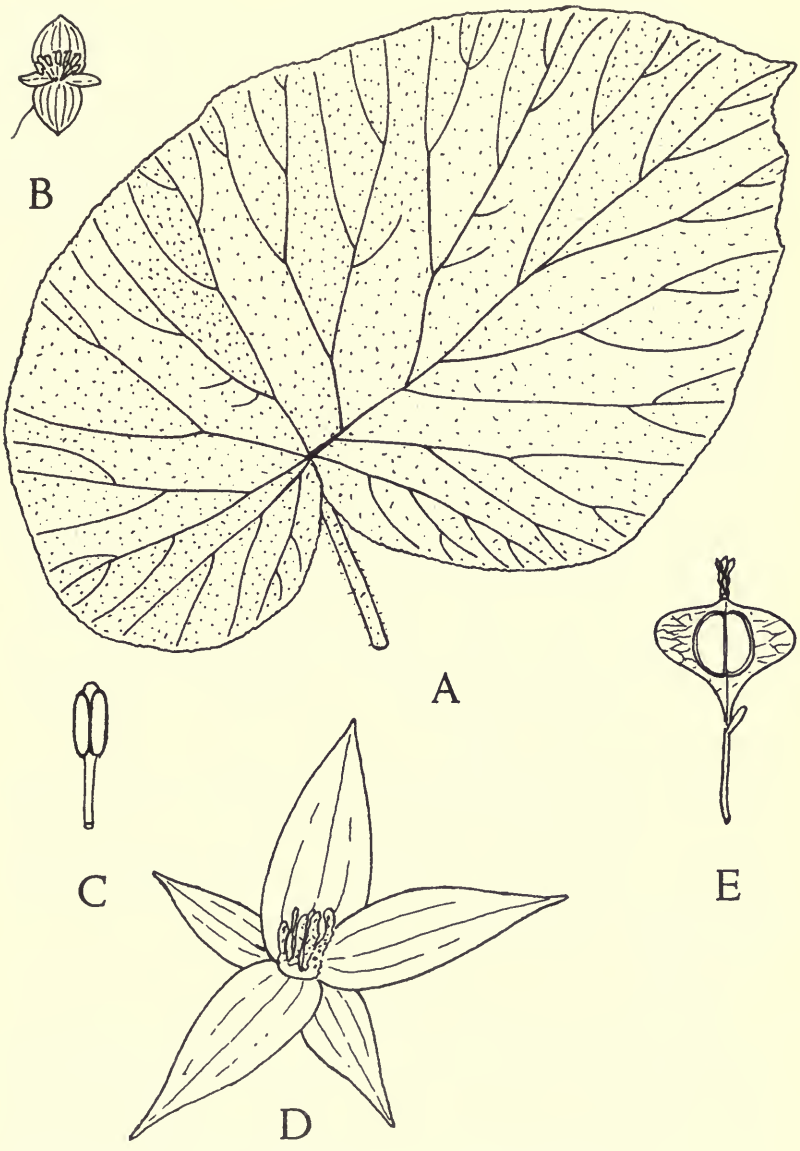


FIGURE 89

Begonia otophylla

A, Leaf (X ¼); B, Staminate flower (X 1); C, Stamen (X 5); D, Pistillate flower (X 5); E, Fruit (X 1).

3. Smaller capsule-wings marginiform, very narrow. *B. sulcata.*

2. Petiole encircled at its summit by a lacerate-fimbriate scale or scales ..... *B. sucrensis.*

1. Capsule bearing two wings that are large and subequal and a third much smaller one or three large subequal wings; linear trichomes more or less massed at the summit of the petiole *B. otophylla.*

THYMELEACEAE

Daphnopsis dircoides Steyermark, sp. nov.

Frutex 1.3-2-metralis; ramis teretibus vetustioribus glabris vel glabrescentibus, purpureo-fuscis, lenticellis oblongis vel suborbicularibus conspicue punctulatis, novellis dense pilosis; foliis cernuis coriaceis subtus argenteis elliptico-oblongis apice obtusis vel rotundatis vel subacutis basi obtusis 5.5-12.5 cm. longis 1.5-6 cm. latis marginibus subrevolutis, supra glabris subtus glabris vel praesertim ad costam mediam atque nervos secundarios minute adpresso-pilosulos, nervis secundariis utroque 6-10 valde adscendentibus ante marginem anastomosantibus; petiolis 3-6 mm. longis 2 mm. crassis dense adpresso-pilosis; floribus et fructibus non visis.

Type in herb. Chi. Nat. Hist. Mus., collected on crest of cerro between east and west end, Sororopán-tepuí, state of Bolívar, alt. 2255 m., November 14, 1944, *Julian A. Steyermark 60136*, "shrub 4-6 feet tall; leaves drooping, coriaceous, dull green above, silvery below, sometimes purple-veined."

The appearance of this shrub in the field greatly resembles that of the North American leatherwood *(Dirca palustris)*, hence the specific name. It is distinguished from *D. longipedunculata* Gilg, the only other species at present known from the Venezuelan Guayana, by the differently shaped, thick, coriaceous, drooping leaves strongly veined on the lower surface with strongly ascending mostly appressed-pilose pubescence.

LYTHRACEAE

Cuphea serpyllifolia H.B.K., var. **tachirensis** Steyermark, var. nov.

A typo differt petalis albis et foliis hispidioribus marginibus scabro-hispidulis.

Type in herb. Chi. Nat. Hist. Mus., collected between Villapaez and Betania, along Río Táchira, near Colombian-Venezuelan boundary, state of Táchira, alt. 2130-2285 m., July 12, 1944, *Julian A. Steyermark 57162*, "petals white."

This differs from typical *C. serpyllifolia* in having white instead of purplish petals, and in the greater abundance of trichomes on the leaves.

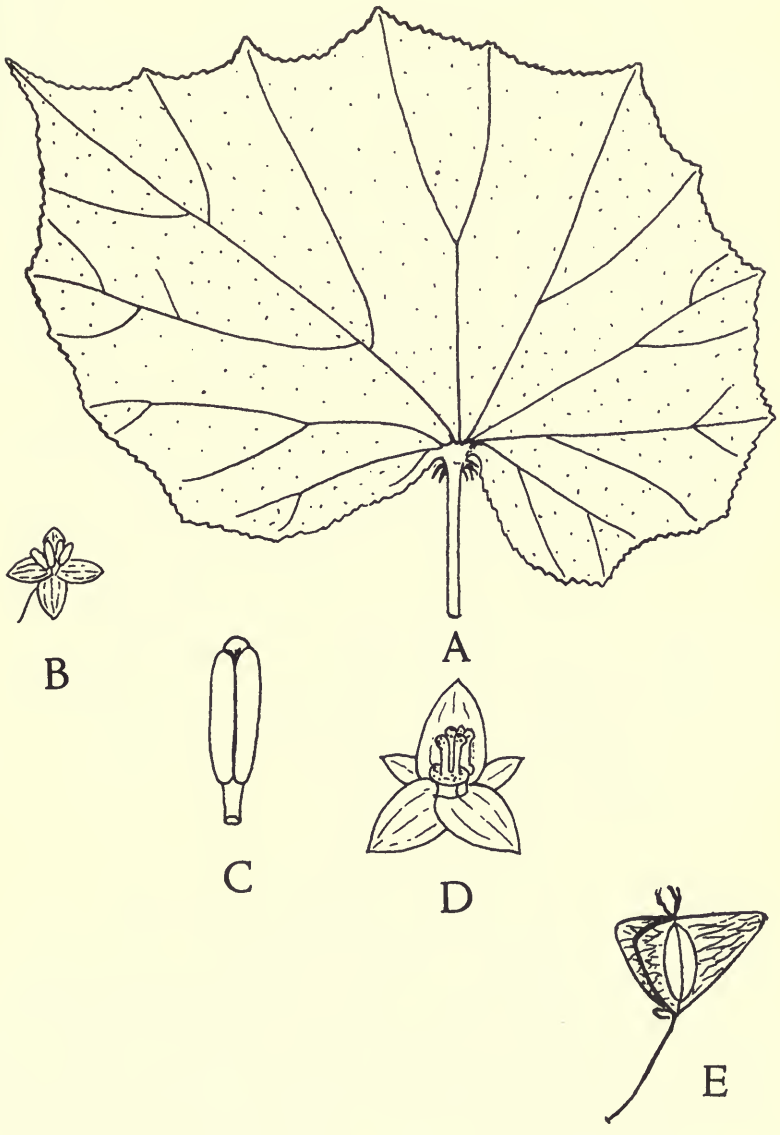


FIGURE 90

Begonia sucrensis

A, Leaf (X ½); B, Staminate flower (X 1); C, Stamen (X 5); D, Pistillate flower (X 5); E, Fruit (X 1).

LECYTHIDACEAE

Lecythis karuaiensis Steyermark, sp. nov.

Arbor glabra; ramulis crassis angulosis; petiolis 1.7-2 cm. longis crassis; laminis coriaceo-chartaceis supra atroviridibus anguste vel late oblongis vel elliptico-oblongis apice subobtusis basi acutis vel obtusis 11-15.5 cm. longis 5.5-10.5 cm. latis, marginibus crebro crenulato-serrulatis, costa media utrinque conspicua, nervis secundariis utroque 11-12 arcuato-adscendentibus supra sulcatis subtus cum venulis reticulatis valde prominentibus atque ante marginem 3-5 mm. anastomosantibus; inflorescentiis terminalibus paniculatis 9.5-20 cm. longis, ramulis plerumque 5 robustis 1-7 cm. longis 3-6 mm. diametro; rhachidibus crassis angulatis 8-14-floris; pedicellis subnullis; floribus non visis; pyxidio 4-loculari subgloboso-turbinato 3.5-3.7 cm. alto 4 cm. lato, lobis calycis 6 magnis persistentibus 1 cm. longis basi 1.5 cm. latis triangulari-ovatis obtusis; pericarpio lignoso 3-4 mm. crasso.

Type in herb. Chi. Nat. Hist. Mus., collected in woods bordering savana, along Río Karuai, at base of Sororopán-tepuí, west of La Laja, state of Bolívar, alt. 1220 m., November 29, 1944, *Julian A. Steyermark 60767*, "tree; leaves coriaceous-chartaceous, dark green above, dull green below; fruit pale brown; calyx lobes pale green."

Local name: "comé-yek."

This species is characterized by the prominently nerved large leaves with closely crenulate-serrulate leaf margins, elongated petioles, thick branches of the panicles, and sessile fruits. It has larger leaves than *L. Davisii* Sandwith. It resembles *Eschweilera alutacea* A. C. Smith superficially, but that species has short petioles and less prominently crenulate-serrulate leaf margins. From *Chytroma congestiflora* (Benoist) R. Knuth it differs mainly in the closely crenulate-serrulate leaf margins.

The bark of the tree is used as "majagua" for tying purposes and for head bands in carrying various supports.

RHIZOPHORACEAE

Sterigmapetalum guianense Steyermark, sp. nov.

Arbor 15-23-metralis, ramis 3-4-verticillatis, teretibus, vetustioribus glabris juvenilibus sericeo-pubescentibus; stipulis ovato-triangularibus apice obtusis 6-7 mm. longis utrinque dense sericeis; foliis 3-4-verticillatis breviter petiolatis, petiolis 5-9 mm. longis glabris, laminis coriaceis late cuneatim obovatis 3.5-8 cm. longis 2-7 cm. latis apice plus minusve subtruncato-emarginato vel late rotundato glabris, marginibus remote inconspicue minute glandulari-denticulatis vel subintegerrimis, costa media subtus prominenti glabra vel parce adpresso-pubescenti, nervis secundariis utroque 9-10 arcuato-adscendentibus utrinque venulis valde reticulatis; inflorescentiis in axillis foliorum superiorum subterminalibus; pedunculis 1-2 cm. longis arcte sericeis; floribus foemineis: alabastro 3-4 mm. longo extus parce sericeo intus dense sericeo; lobis

petalorum 6-10 apicibus dense hispidis, extus superne dense sericeo-pubescentibus; ovario 5-loculari dense hirsuto; stigmate 5-lobulato; floribus masculis: staminibus 10.

Type (pistillate plant) in herb. Chi. Nat. Hist. Mus., collected in dense forest at base of cerro along Río Karuai, Ptari-tepuí, state of Bolívar, alt. 1220 m., November 27, 1944, *Julian A. Steyermark 60658*, "tree 60 feet tall; leaves coriaceous, deep green above, dull green below."

Other collections from Ptari-tepuí, state of Bolívar, pertaining to this species are: rich woods bordering quebrada at base of southeast-facing slopes, alt. 1585-1600 m., November 10-11, 1944, *Steyermark 60042*, "tree 60-70 feet tall; leaves coriaceous, deep green above, dull green below; flower buds green;" vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and Sororopán-tepuí, alt. 1615 m., November 15-17, 1944, *Steyermark 60288*, "tree 70 feet tall; leaves erect, coriaceous, deep green above, pale green below."

The following collections from Surinam are conspecific with the Venezuelan plant: low forest, 200 m. south Savanna No. IV, Tafelberg, alt. 550 m., September 17, 1944, *Bassett Maguire 24780* (staminate flowers), "tree 15 m. high, 30 cm. diam., flowers white; common;" and, standing above low forest, border Savanna No. I, Tafelberg, alt. 565 m., September 13, 1944, *Maguire 24737*, "tree 15 m. high, 20 cm. diam.; frequent."

Local name (Venezuela): "amur-i-u-rai-yek."

This species differs from *S. colombianum* Monachino in the densely hirsute ovary, the larger, more conspicuous, and more densely sericeous stipules, the larger more open reticulum of the more coriaceous leaf blades which are more definitely emarginate at the apex, and the usually more densely appressed pubescent midrib on the lower surface of the leaf.

COMBRETACEAE

Buchenavia ptariensis Steyermark, sp. nov.

Arbor 8-17-metralis, ramulis novellis gemmisque rufescente adpresso-pubescentibus vetustioribus glabrescentibus, ligno vetustiori cinereo, ligno novello cinereo-brunneo; foliis ad apices ramulorum 3-6 congestis, coriaceis vel chartaceo-subcoriaceis, cuneato-obovatis, apice rotundatis basi in petiolum glabrum vel parce pilosulum 2-6 mm. longum decurrentibus cuneato-attenuatis, laminis epunctatis eglandulosis, utrinque plerumque glabris laxe reticulatis, supra costa media valde sulcata, subtus conspicue elevata glabra vel parce pilosa, nervis lateralibus utroque 2-3 supra sulcatis subtus elevatis ante marginem 1-2 mm. anastomosantibus, nervorum axillis juxta costam hinc illinc glabris, marginibus revolutis; floribus et fructibus ignotis.

Type in herb. Chi. Nat. Hist. Mus., collected in scrubby woods, vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and Sororopán-tepuí, state of Bolívar, alt. 1615 m., November 15-17, 1944,

Julian A. Steyermark 60271, "tree 50 feet tall; leaves coriaceous, dark green above, dull paler green below."

Cotype in herb. Chi. Nat. Hist. Mus., collected on southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Steyermark 60038*, "small tree by creek bank, 25 feet tall, the branches spreading horizontally to give tree a fan-shaped appearance; leaves chartaceous-subcoriaceous, deep green above, dull pale green below."

Local name: "cuyuri-yek" or "cuyu-li-yek."

The horizontal spreading branches which impart a fan-shaped appearance to the tree are quite characteristic of this species. It closely resembles *B. parvifolia* Ducke of Brazil, from which it differs in the more coriaceous mostly glabrous leaves, with fewer lateral nerves more sulcate on the upper surface, and in the glabrous instead of barbate axils at the junction of the lateral nerves with the midnerve on the lower surface.

Unfortunately, no flowering or fruiting material is available, but the vegetative differences of this species are quite distinctive.

MELASTOMACEAE[24]

Castratella rosea Gleason, sp. nov.

Folia dense cespitosa, oblanceolata, usque ad 2 cm. longa, 3-nervia, subacuta, supra longe sparseque setosa, subtus glabra vel hinc inde setis paucis ad venas primarias ornata. Scapae ca. 1 dm. altae, hirsutae, nudae vel jugum unicum foliorum parvorum apicem versus emittentes. Flores paucae confertae bracteatae. Hypanthium poculiforme, 3.5 mm. longum, setosum. Sepala ovata, 3.3 mm. longa, setosa et ciliata. Petala rosea, obovata, 8 mm. longa. Stamina isomorpha; filamenta 3 mm. longa; thecae obovato-oblongae, 1.5 mm. longae, poro lato apicali dehiscentes.

Type in herb. Chi. Nat. Hist. Mus., collected on limestone outcrops of Páramo de Tamá, near Colombian-Venezuelan border, state of Táchira, alt. 3045-3475 m., *Julian A. Steyermark 57399*, "petals rich pink within, deeper pink or rose-pink without; stems lavender-brown or purplish; leaves grass green above, paler below, subcoriaceous or firmly membranaceous. By springy places."

In contrast with the characters stated above *C. piloselloides* has 5-nerved leaves copiously pubescent on both sides, larger flowers, yellow petals, and oblong anthers opening by a distinctly ventral pore.

It is equally surprising to discover in the same region a third species of Bucquetia:

Bucquetia vernicosa Gleason, sp. nov.

Frutex ramosus 3 m. altus, ramis juvenilibus suberoso-4-angulatis, internodis 3-5 mm. longis. Petioli 1-2 mm. longi. Laminae sub-

[24]By H. A. Gleason

coriaceae, ellipticae, 10-15 mm. longae, obtusae, integrae, basi angustatae, 3-pli-nerviae, supra nitentissimae, subtus pallidiores nigro-punctatae. Flores 4-meri, folia vix superantes; pedicelli 2-3 mm. longi. Bracteae ellipticae, obtusae, 3.5-4 mm. longae, obscure 3-nerviae. Hypanthium poculiforme, 3 mm. longum, vernicosum. Sepala triangularia, acuta, a sinibus 1.5 mm. longa 2 mm. lata, minutissime ciliolata. Petala inequilatera, purpurea, 8 mm. longa. Stamina isomorpha; filamenta gracilia, 5 mm. longa; thecae oblongae, 3 mm. longae, poro minuto dorsali dehiscentes, inappendiculatae. Stylus 11 mm. longus; stigma punctiforme.

Type in herb. Chi. Nat. Hist. Mus., collected in swampy meadow in Paramito between Quebrada de Palmar and Quebrada de Paramito, at base of Páramo de Tamá, state of Táchira, alt. 2500 m., *Julian A. Steyermark 57211*, "shrub 8-10 feet tall; leaves firmly membranaceous-chartaceous, deep dull green above, pale green below; petals deep rose-orchid; filaments rose-orchid; style rose-red; anthers yellow."

B. glutinosa (L.) DC., well known from the paramos near Bogotá and extending north into Santander, has a barely winged stem, much larger leaves opaquely green above, much larger, many-nerved bracts, a larger pale green hypanthium, and much longer petals.

Microlicia Steyermarkii Gleason, sp. nov.

Frutex glaber, fastigiato-ramosus, 3-5 dm. altus, internodis acute 4-angulatis, ca 1 mm. longis. Folia fere sessilia, coriacea, oblanceolata, 6-10 mm. longa, 2-2.5 mm. lata, subacuta, margine incrassata crenulata, basi cuneata, 1-nervia, utrinque impresso-punctata et resinosa. Flores solitarii, breviter pedicellati, 5-meri. Hypanthium obconicum, ca. 3 mm. longum resinosum. Sepala erecta, anguste triangularia, 4 mm. longa, resinoso-punctata. Petala rosea, ca. 11 mm. longa. Stamina majora: thecae ovoidea, 1.7 mm. longae, breviter rostratae; connectivum basi 3.5 mm. productum ad summun filamenti et infra filamentum in appendicem teretem 1.5 mm. longam. Stamina minora: thecae 1.2 mm. longae, breviter rostratae; connectivum infra thecam 1.5 mm. longum, infra summum filamenti in lobum obovatum 0.5 mm. longum productum.

Type in herb. Chi. Nat. Hist. Mus., collected on large mesa in Gran Sabana, between Mission of Santa Teresita de Kavanayén northwest to Río Karuai, state of Bolívar, alt. 1220 m., *Julian A. Steyermark 59331*, "bushy, 1-1½ feet tall; petals rose; leaves dull olive green both sides, firmly membranaceous."

It differs from *M. Benthamiana* Triana, known only from the same general region, in the conspicuously prolonged connective of the smaller stamens and in the oblanceolate leaves. It differs from *M. bryanthoides* Oliver, known only from Mount Roraima, in its oblanceolate, thick-margined, crenulate, densely resinous-punctate leaves and its narrowly triangular sepals. Unfortunately only one flower is available and measurements have been taken from dry material.

Siphanthera cordifolia (Benth.) Gl., var. **glomerata** Gleason, var. nov.

A typo differt foliis paulo majoribus, usque ad 10 mm. longis, floribus 5-7 in quoque axilla superiore, in glomerulos subglobosos confertis, spicam crassam interruptam formantibus.

Type in herb. Chi. Nat. Hist. Mus., collected on large mesa in Gran Sabana, between Mission of Santa Teresita de Kavanayen northwest to Río Karuai, state of Bolívar, alt. 1220 m., *Julian A. Steyermark 59397*, "leaves erect, appressed, dull green above, paler beneath; petals dull rose; calyx lobes dull lavender; in erect clumps."

In general aspect the plant is quite unlike the typical element of the species.

Farringtonia Gleason, gen. nov.

Tribus *Microlicieae*. Flores 4-meri, solitarii, axillares, breviter pedicellati. Hypanthium poculiforme. Sepala basis ovata tunc trianularia, apice glandulose-setacea. Stamina 4 episepala; filamenta gracilia; antherae subulatae rostratae; connectivum ad dorsum thecae incrassatum, infra thecam in lobos 2 semiglobosos expansum. Semina recta neque cochleata.

Farringtonia fasciculata Gleason, sp. nov.

Herba simplex annua 8-15 cm. alta. Caulis teres, apicem versus densiter strigosa, pilis 1-1.5 mm. longis, supra basin affixis. Folia ad nodos densiter fasciculata, subsessilia, basibus fere obtectis a pilis nodorum, ovato-lanceolata vel oblongo-lanceolata, crassa vel coriacea, 1-2.5 mm. longa, apice brevissime mucronulata, arcte revoluta, basi rotundata, avenia, toto glabra. Hypanthium 1.3 mm. longum, sparse glanduloso-pubescens atque setosum. Sepala 1.6 mm. longa. Antherae cum rostro et connectivo 2.1 mm. longae (Fig. 91).

Type in herb. Chi. Nat. Hist. Mus., collected between Esmeralda Savana and southeastern base of Cerro Duida, Territorio Federal Amazonas, alt. 200 m., *Julian A. Steyermark 57837*, "herbaceous, erect. Swampy rill in savana."

The oblong seeds and the anterior appendages of the anthers place this remarkable plant at once into the *microplicieae*, while the rostrate anthers, only four in number, and the four-merous flowers show its relationship to *Siphanthera* Pohl. It differs from that genus in its stoutly subulate anthers, its large anther-appendages, its malpighian hairs on the stem, and from all known species of the genus in its fascicled, Empetrum-like leaves. The generic name commemorates Edith Farrington Johnston, gifted painter of flowers.

Tibouchina cryptadena Gleason, sp. nov. Sect. *Pleroma*.

Frutex 1.5 m. altus, ramis acute 4-angulatis, dense breviterque pubescentibus. Petioli ca. 1 cm. longi, dense molliterque villoseostrigosi. Laminae firmae, ovato-ellipticae, usque ad 11 cm. longae 3.5 cm. latae, acutae, integrae, basi rotundatae, 5-nerviae, supra molliter villoso-strigosae, subtus densissime villosulae; venae secundariae anastomantes. Panicula terminalis pauciflora; pedicelli adpresse-villosi et breviter glandulosi; bractaea deciduae lanceolatae,

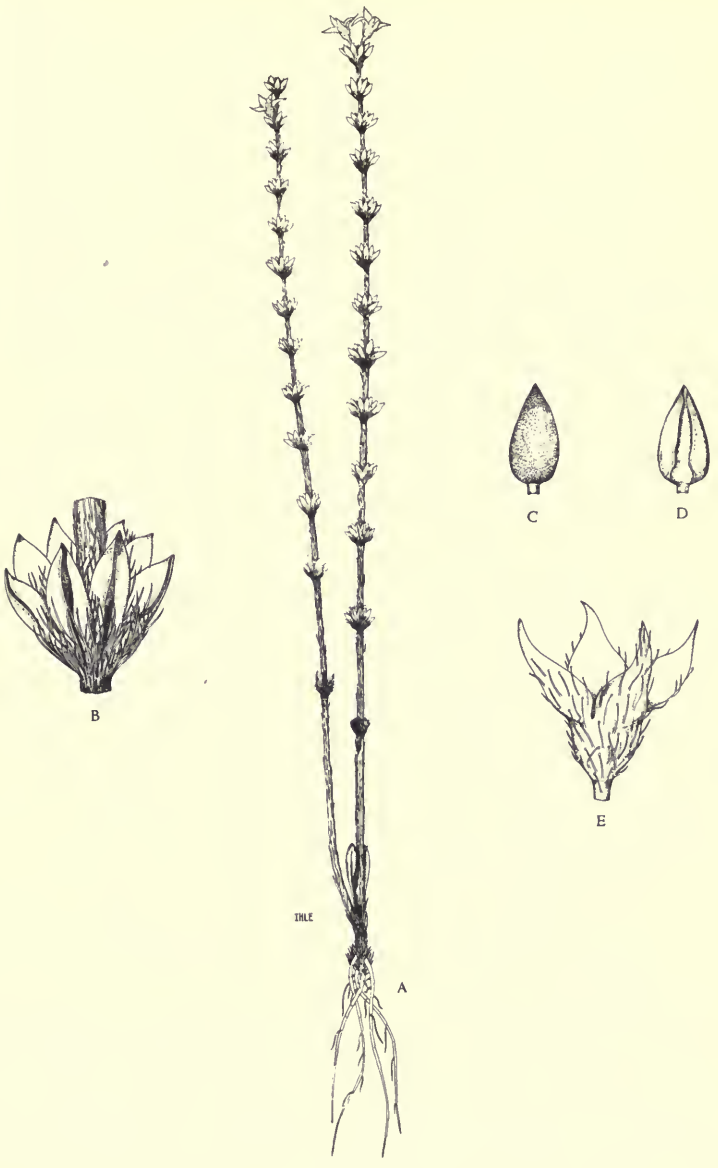


FIGURE 91

Farringtonia fasciculata

A, Habit of plant (X 2.6); B, Single cluster of leaves (X 13.6); C, Leaf, dorsal view (X 13.6); D, Leaf, ventral view (X 13.6); E, Calyx (X 16).

hypanthium aequantes. Flores 5-meri. Hypanthium late fusiforme, 9 mm. longum, densissime strigosum atque glandulosum, pilis glandulosis praecipue obtectis. Sepala ovato-lanceolata, 7 mm. longa, dorso dense strigosa. Petala ca. 20 mm. longa, ciliolata. Stamina fere isomorpha; filamenta 9-9.5 vel 10-10.5 mm. longa, infra medium sparse glanduloso-villosa; connectiva infra thecas 1.8 vel 2 mm. producta, basi lobis 2 minutis ornata. Ovarium semi-inferum 5-loculare, dense strigosum; stylus rectus, 20 mm. longus, infra medium villosus; stigma truncatum.

Type in herb. Chi. Nat. Hist. Mus., collected between Beguilla and Mucuchachí, state of Merída, alt. 1065-2430 m., *Julian A. Steyermark 56307*, "petals deep orchid-purple; filaments and appendages rose; leaves dull green above with sulcate nerves, pale green below with prominent creamy-buff raised nerves; stems square."

The sepals are almost certainly deciduous at full maturity; this character together with the general habit places our plant in the section *Pleroma*, which is otherwise essentially restricted to southern Brazil. In many respects it is similar to *T. Langsdorffiana* (Bonpl.) Baill., in which the pubescence of the sepals is confined to a central strip.

Tibouchina duidae Gleason, sp. nov. Sect. *Eutibouchina*.

Suffrutescens, 3-6 dm. alta, parce ramosa. Caules graciles, primum toto lepidoti, diu glabri cortice exfoliato. Folia rigida, coriacea, sessilia, adscendentia, ovato-oblonga, 10-18 mm. longa, acuta, integra, basi rotundata, uninervia, utrinque densissime lepidota, squamis imbricatis adpressis, apicibus triangularibus acutis; vena supra impressa, subtus prominens, squamis majoribus quam illis paginae. Flores pauci, solitarii et sessiles in axillis superioribus. Bracteae 4, distinctae, acutae, sicut folia lepidotae, exteriores anguste obovato-oblongae, 12 mm. longae, interiores late ellipticae, 9 mm. longae, ciliatae. Sepala ovato-triangularia, ca. 5 mm. longa, acuminata, involuta, dense lepidota.

Type in herb. Chi. Nat. Hist. Mus., collected on summit of Cerro Duida, Territorio Federal Amazonas, alt. 1700-1980 m., *Julian A. Steyermark 58203*, "leaves dull dark green above, dull green beneath; petals wine-purple."

Obviously related to *T. fraterna* N.E.Br. and *T. Spruceana* Cogn., but differing from both in the one-nerved leaves and in the arrangement of scales on the leaves. In those two species the leaf-scales of the upper surface lie transversely and their short free tips form a strip between the primary veins. In *T. duidae* the scales lie longitudinally and are distinctly imbricate.

Tibouchina impressa Gleason, sp. nov. Sect. *Diotanthera*.

Frutex ramosus 3-6 dm. altus, ramis breviter strigosis. Petioli crassi, dense strigosi, ca. 2 mm. longi. Laminae ovato-oblongae, usque ad 25 mm. longae 10 mm. latae, acutae, integrae, basi late cuneatae, utrinque dense strigosae, 3-nerviae; venae primariae supra impressae subtus prominentes, laterales venulas marginales supra

basin emittentes. Panicula pauciflora vel flores solitarii. Hypanthium poculiforme ca. 4 mm. longus, sparse strigosum. Sepala triangulari-lanceolata, 2.3 mm. longa, ciliata, ad nervam mediam elevatam strigosa. Petala deficientia. Stamina dimorpha; filamenta glabra; antherae subulatae, longiores 4.5 mm. longa, connectivo basi 3.5 mm. producto, basi lobis 2 rotundatis ventralibus ornata. Stylus ca. 14 mm. longus glaber.

Type in herb. Chi. Nat. Hist. Mus., collected on south-facing steep slopes, on rocky exposed shrubby portion of knife-like ridge above tree zone, Cerro Peonía (Cerro Los Pajaritos), above Santa Clara, state of Anzoátegui, alt. 1800-2000 m., *Julian A. Steyermark 61616*, "suffruticose bushy plant; petals rose-orchid; leaves firmly membranaceous, deep green with 3 sulcate nerves above, pale green below."

Also from the State of Sucre: Cerro Turumiquire, between eastern and western peaks, on summit following sandstone-covered knife-edge ridge, alt. 2300-2500 m., *Steyermark 62676*.

Comolia coriacea Gleason, sp. nov.

Frutex ramosus. Folia conferta imbricata valde coriacea oblongo-obovata, 5-7 mm. longa, 2-3 mm. lata, obtusa integra enervia, primo minutissime villosa et glanduloso-ciliata, mox glabra, subtus glanduloso-punctata; petioli crassi ca. 1 mm. longi. Flores solitarii in apicibus ramorum subsessiles, 4-meri. Hypanthium obconicum, paene 8-costatum, 2.5 mm. longum ad torum, minutissime villosum. Calyx glanduloso-villosum, pilis 0.2-0.4 mm. longis; tubus erectus 0.4 mm. longus; lobi lineares supra basin late triangularem, erecti, ca. 3 mm. longi. Petala rosea, cuneato-obovata, 13 mm. longa, 6 mm. lata. Filamenta erecta gracilia, epipetala 4.5 mm., episepala 6 mm. longa; antherae ser. int. deficientes, ser. ext. (episepalae) erectae, 2.6 mm. longae, poro minuto ventro-terminali dehiscentes; connectivum basin versus incrassatum, infra basin 1 mm. productum, dilatatum, obscure bilobum. Ovarium superum glabrum 2-loculare; stylus gracilis 10 mm. longus; stigma punctiforme. Capsula hypanthium aequans, ovoidea; semina angulata vix cochleata, 1.2 mm. longa, laevia.

Type in herb. Chi. Nat. Hist. Mus., collected on rocky boulder in open place, Ptari-tepuí, *Bonnetia roraimae* forest on southwest-facing shoulder, state of Bolívar, alt. 2000-2200 m., *Julian A. Steyermark 59755*, "petals rose or deep pink; anthers yellow; filaments creamy white; leaves dull dark green, not revolute."

When *Comolia montana* Gl. was described in 1939 the statement was made that it "is at once recognized and distinguished from all other species of the genus by its crowded coriaceous leaves, which give the plant an aspect singularly reminiscent of Arctostaphylos Uva-Ursi." The same statement applies equally to the present plant. In comparison with the first species, *C. coriacea* has much smaller and proportionately narrower leaves, separated by internodes only 1-1.5 mm. long, and flowers little more than half as large; its leaves are narrowed to the base instead of rounded and the petioles and stems are always glabrous.

Acanthella pulchra Gleason, sp. nov.

Frutex glaber 1.5-2.5 m. altus, internodis nunc elongatis nunc brevissimis, nunquam setosis. Petiola ca. 1 cm. longi. Laminae obovato-oblongae, usque ad 48 mm. longae 28 mm. latae, apice rotundatae vel fere retusae, minute apiculatae, integrae, basi late acutae, 1-nerviae, jugo obscuro marginali neglecto. Flores 4-meri, solitarii in axillis superioribus; pedicelli ca. 15 mm. longi. Hypanthium tubulosum, 11.5 mm. longum. Calycis tubus non productus; sepala basi triangularia 4 mm. longa, abrupte contracta in rostrum terminale 3 mm. longum; dentes exteriores nulli. Petala aurantiaca, elliptica, obtusa, 19 mm. longa. Stamina episepala: filamenta ca. 16 mm. longa; thecae 16 mm. longae, subulatae, poro dorso-terminali dehiscentes, apice fere rostratae; connectivum infra thecam satis productum, 2.5 mm. longum, basi utrinsecus lobis 2 lateralibus ornatum, lobo antico subulato, 1.3 mm. longo, lobo basali rotundato, 0.5 mm. longo. Stamina epipetala similia sed paullum minora. Ovarium superum cylindricum, 3-loculare; stylus 32 mm. longus; stigma punctiforme. Capsula 12-15 mm. longa, late ellipsoidea, sepalis patulis persistentibus coronata, hypanthio inclusa. Semina ca. 34, fere rotunda, 5-6 mm. longa, ala 1 mm. lata circumdata.

Type in herb. Chi. Nat. Hist. Mus., collected among rock outcrops below mouth of Río Sanariapo, along Orinoco River, Territorio Federal Amazonas, alt. 100 m., *Julian A. Steyermark 58438*, "shrub 5-8 feet tall; leaves subcoriaceous, dark green and shining above, pale green below; petals orange with orange-red at base; filaments and appendages deep yellow."

This remarkable plant resembles *Acanthella conferta* (Vell.) Cogn. in its large capsule enclosed in the persistent hypanthium and crowned by the enlarged persistent sepals, in its large winged seeds, and in its dimorphic stems, in which a series of long internodes are followed by a series of very short ones with crowded leaves. It differs from *A. conferta* in the absence of setae subtending the leaves (whence the generic name), in the broad and blunt one-nerved leaves, in the obtuse petals, and above all in the elongate connective bearing two lateral lobes on each side. The latter feature is so significant that the plant might well be made the basis of an independent but related genus.

Acanthella has regularly been referred to the tribe *Merianeae*. In this group, all the genera except one have a single, median, dorsal appendage on the connective or arising from the back of the anther, or two such appendages, both median. Lateral appendages occur only in *Acanthella*. The seeds of all genera except *Acanthella* are elongate, wingless or very narrowly winged; only in *Acanthella* are they large, broad, and strongly winged all around.

Meriania Steyermarkii Gleason, sp. nov. Sect. *Umbellatae*.

Arbor 9 m. alta, ramis juvenilibus 4-sulcatis, minutissime stellato-puberulis atque ferrugineo-villosis. Petioli 2-5 cm. longi, densissime villosi. Laminae late ellipticae, usque ad 20 cm. longae 13 cm.

latae, subacutae, reverse crenatae, basi obtusae, 5-nerviae, jugo marginali neglecto, supra glabrae, subtus ad venas stellatae et villosae sicut rami, ad venulas sparse villosae, ad paginam villosulae; venae secundariae 5-8 mm. dissitae, sub angulo 75-90° divergentes. Panicula terminalis erecta densissime brunneo-villosa; pedicelli ca. 8 mm. longi. Hypanthium campanulatum, ad torum 8 mm. longum, densissime villosim, pilis 1.5-2 mm. longis, parietibus crassis lignosis. Calycis tubus a toro ca. 3 mm. productus, fere erectus; sepala semicircularia, a toro 5 mm. longa; dentes exteriores adnati fere ad apicem sepalorum, pars libera 3.3 mm. longa, teres. Petala late triangulari-obovata, glabra, 22 mm. longa. Stamina isomorpha. Filamenta complanata, ca. 12 mm. longa. Thecae complanatae, ovato-lanceolatae, 2-loculares, a connectivo valido partitae, poro terminali dehiscentes; connectivum teres 3.3 mm. longum, lobo mediano rotundato brevi ornatum. Ovarium 5-loculare, superum; stylus 22 mm. longus, ad stigma punctiforme gradatim attenuatus.

Type in herb. Chi. Nat. Hist. Mus., collected in dwarf cool forest between El Molino and ridge above San Isidro Alto, state of Mérida, alt. 2430-2895 m., *Julian A. Steyermark 56513*, "tree 30 feet tall; leaves subcoriaceous, dark rich green above and conspicuously areolate-nerved, brownish green below with raised nerves and areolation between; petioles and rachis ferruginous-brown as are pedicels and calyx; style, filaments, and petals deep vermilion."

Of the few species assigned to section Umbellatae, *M. boliviensis* Cogn. is much less pubescent and has distinctly 5-pli-veined leaves; *M. colombiana* Gl. has leaves scabrously pubescent above and quite different anthers; *M. quintuplinervis* Naud. has exterior teeth shorter than the sepals, and *M. Weberbaueri* Macbr. has different anthers and merely furfuraceous pubescence.

Graffenrieda curta Gleason, sp. nov.

Frutex, ramis minutissime stellato-furfuraceis. Petioli graciles, 2-3 cm. longi, stellato-furfuracei. Laminae oblongo-ellipticae, usque ad 17 cm. longae 7 cm. latae, breviter acuminatae, integrae, sparse breviterque spinuloso-ciliatae, basi rotundatae, 5-nerviae, jugo externo submarginali, utrinque glabrae. Panicula pyramidata ramosa; ramuli 3-flori. Flores 4-meri, terminales sessiles, laterales breviter pedicellati et bracteolati. Hypanthium tubulosum, ad torum 2.8 mm. longum, sparse stellato-pubescens. Calyx in alabastro clausus, ad anthesin irregulariter ruptus in lobos fere hyalinos, 1.2 mm. longus. Petala oblongo-elliptica, 3.5 mm. longa. Stamina isomorpha; filamenta 2.5 mm. longa, infra apicem 0.6 mm. lata, glabra; antherae subulatae arcuatae, poro dorso-terminali dehiscentes, thecis 3 mm. longis; connectivum infra thecas 0.8 mm. productum in calcar triangularem 0.3 mm. longum truncatum. Ovarium superum; stylus rectus, 5.6 mm. longus; stigma truncatum.

Type in herb. Chi. Nat. Hist. Mus., collected on southeastern-facing sandstone bluffs near Caño Negro (tributary of Caño Iguapo), Cerro Duida, Territorio Federal Amazonas, alt. 1095-1520 m., *Julian A. Steyermark 58026a.*

Among the numerous species of the genus, this is the only one I have seen with a blunt spur on the connective. *Steyermark 59518,* from Ptari-tepuí, state of Bolívar, is the same.

Graffenrieda lanceolata Gleason, sp. nov.

Frutex usque ad 1 m. altus. Rami fere glabri. Petioli 4-8 mm. longi. Laminae anguste lanceolatae, coriaceae, 4-7.5 cm. longae, 1-1.5 cm. latae, acuminatae, integrae, paullo revolutae, basi obtusae, 3-nerviae, utrinque glabrae. Inflorescentia terminalis, pedunculata, pauciflora, 2-3 cm. longa. Flores 4-meri, sessiles, solitarii laterales vel in glomerulos trifloros aggregati. Hypanthium fructiferum breviter cylindricum, ad torum 4 mm. longum, obtuse 8-costatum, minute pulverulentum, parietibus crassis lignosis. Calycis tubus ca. 0.4 mm. productus; sepala late triangularia, a toro 0.8 mm. longa; dentes exteriores nulli. Ovarium 3-loculare, superum; capsula loculicida, ovoidea, 3.5 mm. longa.

Type in the Britton Herbarium of N.Y. Bot. Gard., collected from gorge of Caño Negro, Savanna Hills, Mount Duida, Territorio Federal Amazonas, alt. 4000 ft. *Tate 806;* also collected in the same locality by *Steyermark 58214,* and represented in the U.S. National Herbarium by specimen collected elsewhere by Cardona.

The Tate plant, being the most complete specimen, has been selected as the type. This is the plant already mentioned from Duida (Bull Torrey Club 58: 434. 1931.) as possibly a *Tococa.* While I regret the description of any species of melastome without flowers, the presence of this species in at least three herbaria makes a name for it highly desirable. The aspect of the plant, the inflorescence, the capsule and the seeds all point to *Graffenrieda* as the proper genus.

Macrocentrum minus Gleason, sp. nov.

Herba parva; caules usque ad 1 dm. longi, 4-angulati, sparse setosi praesertim ad angulos, pilis simplicibus 1-2 mm. longis, internodiis 3-7 mm. longis. Folia opposita in quoque jugo fere aequalia, obovata, 5-11 mm. longa, 4-6 mm. lata, apice rotundata, obscure serrulata, ad basin in petiolum 2-4 mm. longum angustata, utrinque sparsissime longisetosa. Flores deficientes. Capsulae (2 observatae) in axillis superioribus solitariae, obconicae, valde 8-costatae, 8 mm. longae, glabrae. Sepala 4, semicircularia, minutissime ciliolata (Fig. 92).

Type in herb. Chi. Nat. Hist. Mus., collected on lower southeastern slopes of Carrao-tepuí, state of Bolívar, alt. 1675-1980 m., *Julian A. Steyermark 60866,* "epiphyte on mossy logs and on living tree-trunks near the base; leaves subcoriaceous, dark lavender green above with punctations, deep rose-orchid below; petals white."

Through the key formerly presented by me (Bull. Torrey Club 58: 424. 1931) this little plant would be referred to the well known *M. cristatum* (L.C. Rich.) Tr., from which it differs in its smaller size, smaller leaves of different shape, solitary flowers, and entirely different general habit.

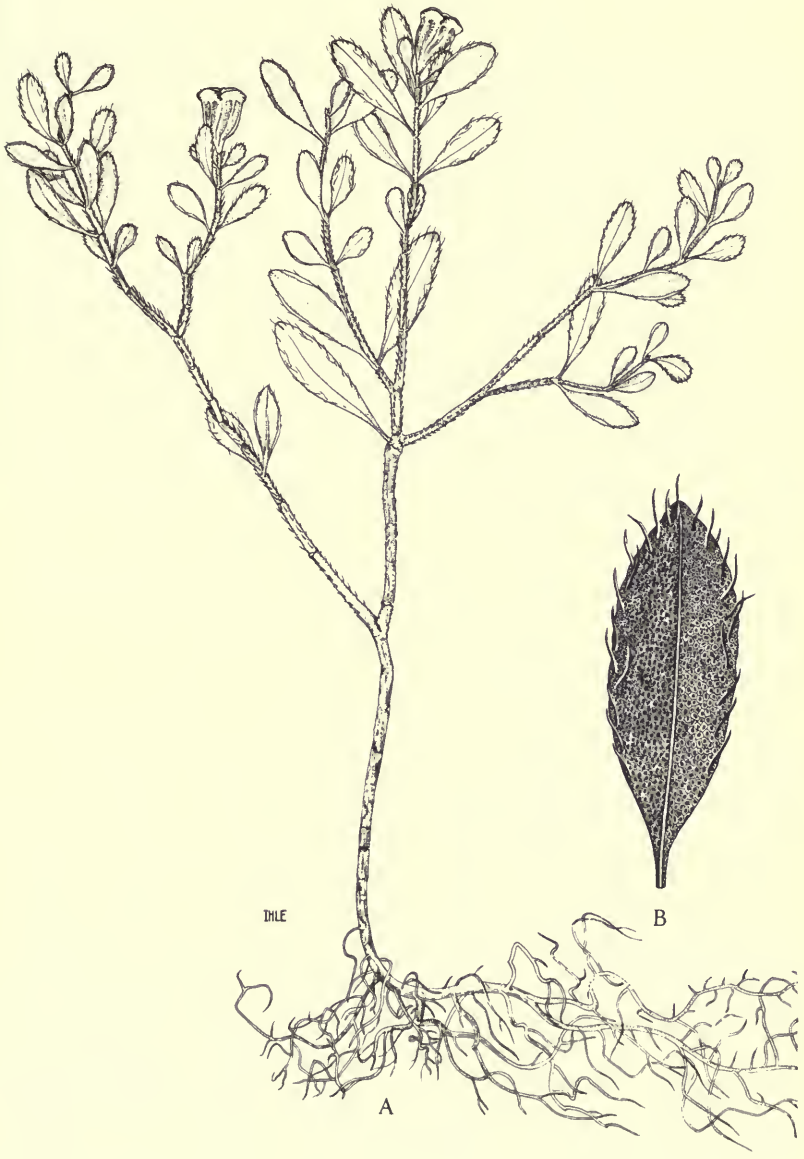


FIGURE 92

Macrocentrum minus

A, Habit of plant (X 1); B, Leaf (X 5).

Leandra edentula Gleason, sp. nov. Sect. *Tschudya.*

Frutex 1.5 m. altus. Rami juveniles densissime hirsuti, pilis adscendentibus simplicibus, 0.5 mm. longis, mox glabrescentes. Petioli 1-2 cm. longi, sicut rami hirsuti. Laminae ovato-lanceolatae, usque ad 10 cm. longae 4 cm. latae, acuminatae, fere integrae, basi rotundatae, 5-nerviae, supra scabrido-hirsutae, pilis erectis 0.5-0.8 mm. longis, ad venas primarias densissime strigosae, pilis 0.5-1 mm. longis, subtus dense hirsutae, pilis ca. 1 mm. longis. Panicula angusta, usque ad 8 cm. longa, hirsuta. Flores desiderantur. Hypanthium fructiferum breviter pedicellatum, subglobosum, lilacinum, 6 mm. longum, dense hirsutum, pilis ca. 1 mm. longis. Calycis tubus 0.2 mm. longus, lobi oblongi, patuli, 1.2 mm. longi; dentes exteriores nulli. Semina semi-obovata, 0.7 mm. longa, apice unilateraliter appendiculata.

Type in herb. Chi. Nat. Hist. Mus., collected on densely wooded slopes of narrow ridge between quebrada and summit, Sororopán-tepuí, state of Bolívar, alt. 2130-2250 m., *Julian A. Steyermark 60171*, "shrub 5 feet tall; leaves membranaceous with dark green above, dull green below with mulberry-lavender nerves; rachis rose-lavender, pubescent as are the pedicels; fruit globose, 8-9 mm. in diameter, lilac;" *Steyermark 60194*, also from Sororopán-tepuí, is the same.

While related to species 189-191 in Cogniaux' monograph, our plant differs from them, as well as from the more recently described *L. procumbens* Ule, in its long sepals without exterior teeth.

Leandra stellipilis Gleason, sp. nov. Sect. *Tschudya.*

Frutex 3 m. altus. Rami juveniles 4-angulati mox teretes, minutissime stellato-puberuli et glanduloso-hirsuti, pilis patulis 1-1.5 mm. longis. Folia fere isophylla. Petioli 2-2.5 cm. longi, sicut caules pubescentes sed densiore. Laminae tenues, ovatae, usque ad 15 cm. longae 8 cm. latae, breviter acuminatae, minute serrulatae, basi rotundatae, 5-pli-nerviae, jugo marginali neglecto, supra in medio areolarum sparse hirsutae, pilis simplicibus rectis 1-1.5 mm. longis, ad venas primarias tomentosae in linea angusta, pilis saepe apice fissis ca. 0.5 mm. longis, subtus ad venas venulasque omnes minutissime stellatae et simpliciter hirsutae, pilis 0.5-1.5 mm. longis; venae secundariae sub angulo fere recto divergentes. Inflorescentia sicut caulis pubescens, paniculata, late ramosa, 1 dm. longa. Flores desiderantur. Hypanthium fructiferum breviter pedicellatum, subglobosum, 4 mm. longum, sicut caulis pubescens. Calycis limbus 0.3 mm. longus; lobi oblongi a toro 1 mm. longi; dentes exteriores fere ad apicem sepalorum adnati, tunc subulati, recurvato-divergentes, hirsuti, 1.6 mm. longi. Semina complanata, semi-obovata, 0.7 mm. longa, apice unilateraliter appendiculata.

Type in herb. Chi. Nat. Hist. Mus., collected on densely wooded slopes of narrow ridge between quebrada and summit, Sororopán-tepuí, state of Bolívar, alt. 2130-2250 m., *Julian A. Steyermark 60162.*

Doubtless closely related to *L. purpurea* Gl., which it resembles in habit. Our species differs in its 5-pli-nerved leaves and especial-

ly in the stellate pubescence which underlies the glandular bristles on stem, petioles, inflorescence, and hypanthium.

Miconia pachypoda Gleason, sp. nov. Sect. *Tamonea.*

Arbor 9 m. alta. Rami superiores, pedunculi, et pedicelli densissime stellato-tomentosi, pilis sessilibus multiradiatis 0.4 mm. longis, atque densiter longeque purpureo-hirsuti, pilis usque ad 10 mm. longis. Petioli validi, usque ad 7.5 cm. longi, subtus stellato-tomentosi supra tomentosi atque hirsuti. Laminae ellipticae, usque ad 38 cm. longae 18 cm. latae, breviter acuminatae, integrae, basi late cuneatae, 5-nerviae, jugo marginali neglecto, supra glabra, subtus molliter stellato-tomentosae, ad paginam cinereae ad venas ferrugineae. Panicula conferta 1 dm. longa; pedunculus 8 cm. longus; pedicelli 1-3 mm. longi, obconici, sub hypanthio dilatati. Flores 5-meri, bracteis 2 deciduis obovato-oblongis 9 mm. longi arcte involucrati. Hypanthium poculiforme, 3.3 mm. longum, glabrum. Calycis tubus 2.6 mm. longus; sepala semicircularia e sinibus rotundatis, 0.7 mm. longa. Petala anguste obovato-oblonga, 12.5 mm. longa. Stamina isomorpha; filamenta gracilia, 10 mm. longa, infra medium sparse breviterque villosa; antherae subulatae, arcuatae, 9 mm. longae, poro ventro-terminali dehiscentes; connectivum non productum. Ovarium superum conicum; stylus 15 mm. longus, infra medium villosum; stigma peltatum, 1.6 mm. diam.

Type in herb. Chi. Nat. Hist. Mus., collected on south-facing densely forested slopes between "Large Lunch River" and "Misia Kathy Camp," Ptari-tepuí, state of Bolívar, alt. 1500-1520 m., *Julian A. Steyermark 59447,* "petals waxy, dull pinkish-cream; filaments orange-brown; connective brown; anthers yellow; nodes, hairs on peduncle, and rachis wine-purple."

The character of the flowers indicates at once the section *Tamonea.* Among the 55 described species of the section not one has pubescence of this character. Its paired bracts suggest a relation to a small species-group including *M. dodecandra* (Desr.) Cogn. and perhaps five other species.

Miconia Steyermarkii Gleason, sp. nov. Sect. *Eumiconia.*

Frutex 1.5-2.5 m. altus, ramis superioribus teretibus arcte stellato-furfuraceis. Petioli crassi, 2 mm. longi. Laminae subcoriaceae, ovato-oblongae, 5-7.5 cm. longae, 2.5-3.5 cm. latae, breviter acuminatae ad apicem obtusam, integrae, basi leviter cordatae, 3-nerviae, jugo submarginali obscuro neglecto, utrinque glabrae, supra nitentes, subtus opacae. Panicula terminalis 4-7 cm. longa. Flores 5-meri, sessiles vel brevissime pedicellati. Hypanthium poculiforme, ad torum 1.6 mm. longum, sparse stellatum. Calycis tubus 0.6 mm. productus erectus; sepala semicircularia, 0.4 mm. longa e sinibus late rotundatis. Petala alba, oblongo-obovata, 3.8 mm. longa, paulo inequilatera. Stamina dimorpha. Series episepala: filamenta gracilia, 3 mm. longa; antherae lineares, ca. 3 mm. longae; connectivum basin versus incrassatum, infra thecas 0.7 mm. productum in lobum triangularem dorsalem et lobos 2 deflexos laterales assurgentes,

apice glandulis 1 vel 2 ornatos. Series epipetala: filamenta 2.2 mm. longa; antherae crassiores, 2.2 mm. longae; connectivum basin versus in lobos 1 dorsalem 2 laterales breviter et obscure productum. Ovarium semi-inferum; stylus 2.3 mm. longus; stigma truncatum.

Type in herb. Chi. Nat. Hist. Mus., collected on summit of Cerro Duida, Savana Hills, Territorio Federal Amazonas, alt. 1025-1200 m., *Julian A. Steyermark 58262*, "shrub 5-8 feet tall; leaves chartaceous-subcoriaceous, deep green and shining above, dull green below; petals creamy white."

The character of the stamens, which indicates its position in Section *Eumiconia*, are duplicated in many other species, from all of which our species stands distinct in the shape of the leaf and the length of the petiole. The same species was collected by Tate in sterile condition, under number 788, and was reported (Bull. Torrey Club 58: 422, 1931) as "possibly a Graffenrieda."

Miconia larensis Gleason, sp. nov. Sect. *Amblyarrhena*.

Frutex 3 m. altus, ramis teretibus primum stipitato-stellatis demum furfuraceis. Petioli 5-8 mm. longi, stipitato-stellati. Laminae coriaceae, ovato-lanceolatae, usque ad 35 mm. longae 16 mm. latae, acutae, integrae subrevolutae, basi rotundatae, 3-nerviae, jugo marginali conspicue neglecto, supra glabrae, valde rugosae, subtus foveolatae, valde reticulatae, ad venas brunneo-stipitato-stellatae, ad venulas albo-stellatae. Paniculae ramosae confertae, 4-6 cm. longae; ramuli 1-flori, 5-8 mm. longi; pedicelli ca. 1 mm. longi; inflorescentia tota dense tomentosa, pilis brunneo-stipitato-stellatis. Hypanthium obconicum, ad torum 5 mm. longum, dense stipitato-stellatum, parietibus crassis. Calycis tubus 2 mm. longus, ut hypanthium stellatus; sepala vera a sinibus rotundatis 5 mm. longa, triangularia, acuminata, intus pubescentia; dentes exteriores toto adnati, ultra sepalorum apices 1 mm. producti. Petala obovata, breviter unguiculata, lamina obovata. Stamina isomorpha; filamenta glabra, gracilia, 3.3 mm. longa, infra apicem geniculata; thecae obovato-oblongae, 3.3 mm. longae; connectivum teres brevissime productum. Ovarium 5-loculare, fere inferum, summo puberulum; stylus gracilis, glaber, 4.7 mm. longus; stigma truncatum (Fig. 93).

Type in herb. Chi. Nat. Hist. Mus., collected in wet meadow at Las Sabanetas, above Los Aposentos, west of Humucaro Bajo, state of Lara, alt. 2530 m., *Julian A. Steyermark 55275*, "shrub 8-10 feet tall bordering edge of woods around meadow; petals white, sometimes tinged at base with pink; style rose-red; filaments whitish; anthers yellow; calyx buff-tawny; leaves rugose finely, dark green above, buff below; main nerves below rufous-brown."

Among the numerous species of the section *Amblyarrhena* which I have examined, only three have elongate sepals, *M. incurva* Gl., of Costa Rica, with much larger flowers and leaves, truncate sepals, and capitate stigma; *M. longisepala* Gl., of Peru, with larger leaves, glandular filaments, and peltate stigma; *M. Skutchii* Gl., of Ecuador, with very large leaves, pubescence of simple hairs, and semicircular sepals.

FIGURE 93
Miconia larensis
(X 1).

Tococa bolivarensis Gleason, sp. nov.

Caulis suffruticosus 6-9 dm. altus, simplex vel pauciramosus, primo sparse minuteque stipitato-stellatus et sparsissime longeque hirsutus, mox glaber, internodis maturis 3-8 cm. longis. Petioli 3-6 mm. longi. Formicaria nulla. Laminae erectae vel adscendentes, oblongae, usque ad 48 mm. longae 22 mm. latae, obtusae, ciliatae pilis simplicibus 2 mm. longis, basi rotundatae, 3-nerviae jugo marginali neglecto, supra in sicco rugulosae venis depressis, sparse hirsutae pilis 2-3 mm. longis, subtus ad venas sparsissime hirsutae ceterum glabrae. Inflorescentia terminalis 3-flora, pedunculo 2.5 cm. longo. Hypanthium cum calyce leviter patulo truncato ca. 7 mm. longum, dense hirsutum, pilis patulis glandulosis 2 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on southeastern portion of base of Carrao-tepuí, state of Bolívar, alt. 1460-1615 m., *Julian A. Steyermark 60856*, "two to three feet tall, branching or single-stemmed; leaves erect, subcoriaceous, dark green above, dull paler green below; hairs on calyx rose-purple; petals salmon-rose with buff on margins; filaments pale rose."

In its general aspect our plant strongly suggests a relation to the well known *T. nitens* (Benth.) Triana, but differs in its smaller leaves, truncate calyx, and glandular hypanthium. It is also reminiscent of the three endemic species of Duida, but differs from *T. obovata* Gl. and *T. montana* Gl. in its truncate calyx and from *T. oligantha* Gl. in its obtuse leaves and glandular hypanthium.

ONAGRACEAE

Fuchsia adpressipilis Steyermark, sp. nov.

Frutex 1.3-2.3-metralis; ramulis dense adpresso-pilosulis; foliis oppositis vel ternatis petiolatis, petiolis 4-27 mm. longis supra rugosis subtus pallidioribus late vel anguste elliptico-oblongis vel obovato-ellipticis apice subacutis basi obtusis vel subacutis 4.7-13.2 cm. longis 2.7-7 cm. latis, marginibus subintegerrimis vel remote minutissime denticulatis, costa media subtus paullo prominenti adpresso-pilosula, nervis lateralibus utroque 10-16 arcuato-adscendentibus subtus paullo prominentibus ante marginem 3-5 mm. anastomosantibus, utrinque laxe areolatis, utrinque adpresso-pilosulis; stipulis deltoideis apice acuminatis minutissimis 1-1.5 mm. longis; floribus 1-2 in axillis superioribus vel paucis terminalibus et lateralibus in racemis brevibus compactis; bracteis late ovatis vel elliptico-ovatis 5-20 mm. longis vel foliis supremis non reductis et foliaceis; pedicellis 4-9 mm. longis dense adpresso-puberulis pilis cinereis; ovario dense cinereo-puberulo sub anthesi 8-13 mm. longo 1.5 mm. diametro; hypanthio rosaceo 18-21 mm. longo inferne 3 mm. lato superne 4-5 mm. lato extus dense cinereo-puberulo; sepalis rosaceis adscendentibus ligulato- vel lineari-oblongis vel oblongo-lanceolatis subobtusis vel subacutis vel acutis 9-12 mm. longis 3.1-3.5 mm. latis extus dense puberulis intus glabris; petalis purpureis vel atropurpureis anguste oblongo-lanceolatis vel anguste oblongo-ellipticis vel elliptico-lanceolatis subacutiusculis vel subobtusiusculis 7-11 mm.

longis 2.5-2.8 mm. latis glabris, sepalis aequantibus vel brevioribus; antheris late oblongis 2.5-2.8 mm. longis; filamentis superne atro-purpureis inaequalibus 4.5-6.5 mm. longis glabris; stylo rosaceo-rubro 27-28 mm. longo glabro; stigmate roseo capitato 2.5 mm. lato; bacca cylindrica vel anguste ellipsoidea 15-25 mm. longa 0.5 mm. lata dense adpresso-puberula.

Type in herb. Chi. Nat. Hist. Mus., collected on slopes of mountain between Santo Domingo and Los Quebraditos, south of Las Sabanetas, above Humocaro Bajo, state of Lara, alt. 2430-2475 m., February 8, 1944, *Julian A. Steyermark 55381*, "shrub 5 feet tall; petals purple; calyx lobes and tube rose, calyx lobes ascending; leaves rugose above, deep green above, paler green below; filaments purplish-orchid."

Also collected between Los Corales and Las Cuadras, state of Mérida, alt. 1490-3210 m., March 25, 1944, *Steyermark 55769*, "shrub-by herb, 4-8 feet tall; the upper parts herbaceous; calyx tube and lobes dull rose; petals blackish purple as are filaments in upper half, rose at base; style rose-red; stigma pink; anther creamy; leaves pale green below, dull dark green above."

Local name: "clavelito."

This species is characterized by the relatively small rose-colored hypanthium and sepals, narrowly oblong-lanceolate purple petals, densely appressed pilosulose stems, pedicels, and outer surface of hypanthium, sepals, and petals, leaf blades more or less densely puberulent on both surfaces, with the upper surface conspicuously rugose, and densely puberulent elongated fruits. If placed with those species having a definite inflorescence, it approaches such species as *F. Hartwegii* Benth. and *F. putumayensis* Munz, both of Colombia, but if placed with the group having axillary flowers in the axils of somewhat reduced foliage leaves, it would approach such species as *F. loxensis* H.B.K. of Ecuador and *F. decussata* R. & P. of Peru or *F. hypoleuca* Johnston of Ecuador.

The second collection cited *(Steyermark 55769)* has slightly shorter, darker purple petals, slightly wider sepals, somewhat shorter hypanthium and less rugose and sometimes narrower leaves with somewhat longer petioles, but in all other respects matches the type collection.

Fuchsia meridensis Steyermark, sp. nov.

Frutex 1.8-2.8-metralis; ramulis minute puberulentibus; foliis oppositis vel ternatis petiolatis, petiolis 3-9 mm. longis minute puberulentibus; laminis membranaceis supra nitidis subtus pallido-viridibus elliptico-oblongis apice acutis vel acuminatis basi plerumque obtusis vel subobtusis 2.5-8.2 cm. longis 0.9-2.5 cm. latis, marginibus subintegerrimis, costa media subtus glabra vel minute remote puberula, ceterum utrinque glabris, nervis lateralibus utroque 10-12 arcuato-patentibus supra sulcatis vel impressis subtus prominentibus ante marginem 1-2 mm. anastomosantibus; stipulis 1.5-2 mm. longis minute puberulentibus; stipulis 1.5-2 mm. longis minute

puberulentibus; floribus solitariis in axillis superioribus; pedicellis 14-16 mm. longis minute puberulentibus; ovario oblongo 4.5-5 mm. longo minute et parce puberulo ca. 2 mm. diam.; hypanthio coccineo 30-35 mm. longo inferne 2-3 mm. lato superne 5 mm. lato extus parce remote puberulenti vel parte dimidia superiori saepe glabrescenti intus villosulo; sepalis coccineis lanceolatis acuminatis 14-16.5 mm. longis 4 mm. latis extus parce remote puberulentibus vel glabrescentibus intus glabris; petalis coccineis anguste oblanceolatis acutis glabris 12-14 mm. longis 3-8 mm. latis, sepalis aequantibus; staminibus inaequalibus 5-10 mm. longis petalorum ½-¾ longitudinem aequantibus; antheris late oblongis 2.5-2.8 mm. longis; filamentis coccineis 4.5-7.5 mm. longis glabris; stylo coccineo 48 mm. longo ultra sepala 2-3 mm. longo extenso superne glabro ceterum villosulo; stigmate capitato 2 mm. diam.

Type in herb. Chi. Nat. Hist. Mus., collected between La Azulita and La Trampa, on road towards Lagunillas, state of Mérida, alt. 1280-2225 m., April 27, 1944, *Julian A. Steyermark 56162*, "corolla and calyx scarlet as are filaments and style; petioles rose-purplish; upper part of stem purplish; shrubby, dangling stems, 5-8 feet tall; leaves membranaceous, rich shining green above, pale green below."

This species apparently has the flowers solitary in the flower axils, and, as such, is most closely related to *F. Llewelynii* Macbride of Peru, from which it differs in the leaf shape, much shorter hypanthium, shorter filaments, and sepals glabrous or minutely and sparsely puberulent instead of strigillose without. From *F. Killippii* Johnston of Colombia, with which it bears some resemblance in the flowers, it differs in the fewer-flowered inflorescence of solitary axillary flowers, mostly obtuse base of the leaf blades, minutely puberulent pedicels, longer cylindric-oblong ovary, shorter stamens and filaments, and style exserted 2-3 mm. instead of 5 mm. beyond the sepals.

Fuchsia verrucosa Hartw., var. **tamaensis** Steyermark, var. nov.

Suffrutex 1.3-1.6-metralis; ramulis glabris vel glabrescentibus vinaceo-purpureis; foliis oppositis petiolatis, petiolis 0.9-2 cm. longis plerumque glabris, laminis firme membranaceis late ovato-ellipticis utrinque acuminatis 10-16.5 cm. longis 4-7 cm. latis, marginibus tenuiter denticulatis infra medium integerrimis excepto, costa media subtus prominenti glabra vel minutissime pubescenti, nervis lateralibus utroque 20-23 subtus paullo prominentibus ante marginem 1-3 mm. anastomosantibus, utrinque laxe areolatis, supra glabris subtus ad nervos atque venulas minutissime puberulis, foliis novellis subtus magis pubescentibus; stipulis triangulari-ovatis subito subulatis 3-3.5 mm. longis; floribus solitariis in axillis superioribus; pedicellis glabris 2-2.8 cm. longis; ovario pallido-viridi subglabro 4-angulato 10-15 mm. longo 3.5 mm. diam.; hypanthio rubro 4.5-5.5 mm. longo utrinque glabro; sepalis rubris oblongo-lanceolatis acutis 8.5-9 mm. longis 4.5 mm. latis glabris; petalis rubris oblongo-obovatis apice obtusis vel subacutis 10 mm. longis 5.5 mm. latis glabris; antheris 2-2.2 mm. longis; filamentis 1-1.1 mm. longis glabris; stylo 8.5 mm. longo; stigmate 2 mm. crasso et longo.

Type in herb. Chi. Nat. Hist. Mus., collected in wooded quebrada in Montaña of Río Táchira at base of Páramo de Tamá, between Betania and Tamá, by Colombian-Venezuelan boundary, state of Táchira, alt. 2430 m., July 13, 1944, *Julian A. Steyermark 57175*, "herb 4-5 feet tall; leaves firmly membranaceous, deep green above, pale green below, areolate below between lateral nerves; stems wine purple; sepals and petals blood or scarlet red; ovary pale green; base of petiole dull lavender."

At first this was believed to represent a new species, but comparison with *F. verrucosa* Hartw. reveals a close relationship with that species. It differs from typical *F. verrucosa* of Colombia in the larger leaf blades with 20-23 instead of 15 lateral nerves on each side, longer petioles, longer anthers, wider sepals, slightly longer petals, and slightly longer ovary. The more numerous lateral nerves and larger leaves are the most striking differences encountered, but the slight floral differences noted probably do not warrant specific segregation.

One of the collections of *F. verrucosa* cited by Munz from Colombia (*Killip & Smith* 19976 from road Pamplona to Toledo, Dept. Santander del Norte) was obtained only approximately 15 kilometers (by air) west and southwest of the present collection in Venezuela.

ARALIACEAE

Dendropanax larensis Steyermark, sp. nov.

Arbor; ramulis glabris novellis angulatis; foliis petiolatis, petiolis 3-5 mm. longis; laminis coriaceis supra atroviridibus nitidis spatulato- vel cuneato-oblongis apice obtusis vel rotundatis mucronatis basi sensim angustatis acutis vel subacutis 2.5-8 cm. longis 1-3.3 cm. latis utrinque glabris, marginibus revolutis, costa media subtus prominenti, nervis lateralibus utroque 3-5 subtus prominentibus, utrinque laxe conspicue reticulatis; inflorescentiis terminalibus hemisphaericis paniculatis 5-5.5 cm. longis 5.5-6 cm. latis, ramulis 1.8-2.2 cm. longis glabris; bracteis late ovatis acutis 2-3 mm. longis glabris; pedunculis 3-5 mm. longis 3-3.5 mm. diam.; capitulis umbellatis globosis 15-30-floris 1.5-1.7 cm. diam.; pedicellis 5-6 mm. longis glabris; hypanthio et calyce 2 mm. longo 3.5 mm. lato; calycis lobis 5 latissimis et brevissimis apiculatis marginibus minutissime pilosulis ceterum glabris; petalis ovato-lanceolatis apice acutiusculis incrassato-incurvatis 3.5 mm. longis 2 mm. latis extus apicem versus dense papillatis; antheris late oblongis vel suborbicularibus 2 mm. longis; filamentis 1.5 mm. longis; ovario 5-loculari glabro; stylis inferne coalitis; fructu ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected between Buenos Aires and Páramo de las Rosas, state of Lara, alt. 2285-3290 m., February 11, 1944, *Julian A. Steyermark 55434*, "leaves coriaceous, dark green and shining above, dull green below, revolute on margins; flowers pale greenish."

Local name: "laurel alcornoco."

This species is distinguished by the cuneate-obovate or spatulate leaves which are rounded and apiculate at tip, and by the globose compact clusters of flowers. The 5-celled ovary places it in *Dendropanax*.

Oreopanax capitatus (Jacq.) Dcne. & Planch., var. **minor** Steyermark, var. nov.

A typo differt foliis minoribus, laminis supra nitidis 6-9 cm. longis 2.3-3.8 cm. latis, et capitulis fructiferis parvis 1.5-1.7 cm. diam. congestis.

Type in herb. Chi. Nat. Hist. Mus., collected between La Cumbre, San José, and Mucutuy, state of Mérida, alt. 1820-2590 m., May 3, 1944, *Julian A. Steyermark 56242*, "shrub or tree 25 feet tall; leaves coriaceous, deep green and shining above, paler green below; fruit green and shining."

This variety differs from typical *O. capitatus* in the smaller leaves, which are shining above, and in the small crowded fruiting clusters.

Oreopanax venezuelense Steyermark, sp. nov.

Arbor 13-17-metralis; ramulis dense stellato-puberulis; petiolis 10-15 cm. longis stellato-puberulis vel glabrescentibus; laminis subcoriaceis supra atroviridibus subtus argenteis, ambitu suborbicularibus 7-38 cm. longis 4.5-60 cm. latis usque ad medium in 3-6 lobulos divisis, lobis oblongo-lanceolatis cuspidato-acuminatis 2.5-27 cm. longis 1.5-10 cm. latis integerrimis vel grosse serratis serraturis oblique triangulari-lanceolatis apice cuspidato-acuminatis, supra glabris subtus dense argenteo-stellato-tomentosis, nervis lateralibus 5-9 prominentibus; inflorescentiis terminalibus paniculatis sub fructu 11.5-24 cm. longis 7-24 cm. latis, rhachi et ramulis dense stellato-tomentosis vel glabrescentibus, ramulis 1.3-3 cm. longis; pedunculorum bracteis amplectentibus ovato-subulatis 4-5 mm. longis tomentosis; capitulis oblongis sub fructu 2.5-12 cm. longis 1.5-4 cm. latis; pedunculis secundariis 2-8 mm. longis dense stellato-tomentellis; pedicellis nullis; calycis lobis sub fructu ovatis acutis 1.5 mm. longis 0.5 mm. latis stellato-tomentellis; stylis 5 liberis brevibus; fructibus ovoideis 5-6 mm. longis 4.5-5 mm. diam. glabris; fructuum bracteis late subrotundato-obovatis rotundatis 2.5 mm. longis 2-3 mm. latis intus glabris extus lateribus glabris ceterum tomentosis.

Type in herb. Chi. Nat. Hist. Mus., collected on rocky limestone north-facing steep forested slopes of Cerro Guácharo, above limestone bluffs above La Laguna, between Guácharo Cave and San Agustín, state of Monagas, alt. 1100-1300 m., April 11, 1945, *Julian A. Steyermark 62017* (3 sheets), "tree 50 feet tall; leaves subcoriaceous, deep green above, silvery buff below."

Also collected on Cerro Turumiquire, on north-facing slopes above La Trinidad in cloud forest zone, southwest of Cocollar, state of Sucre, alt. 2100-2200 m., May 5, 1945, *Steyermark 62433*, "tree 40-60 feet tall; leaves subcoriaceous, dark green above, silvery buff below; fruit becoming black."

xxThis species is distinguished from the related *O. Moritzii* Harms, *O. reticulatum* (Willd.) Dcne. & Planch., and *O. chrysoleucum* Pl. & Lind., in the more contracted denser-flowered inflorescences, the densely finely tomentose peduncles, the densely tomentulose bracts immediately subtending the fruits, the broader, shorter, and mostly less numerous lobes of the leaves, whose lower surface is completely covered by the silvery buff densely tomentulose pubescence, and does not show the fine reticulation as in the species above mentioned.

Schlefflera Cuatrecasasiana Steyermark, sp. nov.

Arbor 5-8-metralis; ramulis robustis in sicco nigricantibus glabris; foliis 6-foliolatis; petiolis robustis nigricantibus 15-21 cm. longis 4-7 mm. diam. minute tomentellis, petiolulis 1.5-4.5 cm. longis nigricantibus; foliolis coriaceis supra atroviridibus subtus pallido brunneis late oblongo-obovatis utrinque rotundatis vel truncatis 11.5-21 cm. longis 6-11 cm. latis marginibus integerrimis incrassatis supra glabris costa media parce remote puberulenti excepto subtus glabris vel minute tomentellis, costa media prominenti, nervis lateralibus utroque 11-15 patentibus utrinque prominentibus, venulis reticulatis; inflorescentiis paniculatis 30-33 cm. longis, ramulis 6-9 adscendentibus robustis 2.5-3.5 cm. longis 5-6 mm. latis angulatis pluricostatis minute tomentellis; pedunculorum bracteis amplectentibus suborbicularibus obtusis vel rotundatis 5-7 mm. longis extus minutissime tomentellis; capitulis subglobosis vel globosis 1.7-2.2 cm. altis 2.2-2.5 cm. latis; floribus sessilibus; ovario 2-loculari glabro; stylis apice liberis sub fructu parte dura 2.5 mm. longis; fructu (immaturo) 10 mm. longo 4 mm. lato; fructuum bracteis obcuneatis apice truncatis incrassatis glabris atque duobus marginibus glabris sed infra apicem et ad carinam pallide lanuginosis 7-7.5 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected in rich moist woods at base of Páramo de Tamá, 4-10 kms. above Betania, state of Táchira, alt. 2500-2895 m., July 15, 1944, *Julian A. Steyermark 57336* (2 sheets), "tree 15-25 feet tall; leaves coriaceous, deep green above, buff brown below."

This species differs from *S. samariana* Cuatr. of the Paramo de Tama of the Colombian side in the well developed and elongated peduncles, fewer heads in the inflorescence, glabrous ovary or young fruits, much larger bracts subtending the fruits, these bracts of a different shape and pubescent only on keel and below tip, rugose upper leaf surface, lower leaf surface with a dense felted coating of hairs instead of a short subappressed type as in *S. samariana*, and broader leaflets, which are more rounded at the tip.

From *S. pentandra* (Pav.) Harms it differs in the stouter, ascending, longer peduncles, and differently shaped leaves, while from *S. angulata* (Pav.) Harms it may be separated by the longer peduncles of each head and in the rugose upper leaf surface.

Schefflera duidae Steyermark, sp. nov.

Frutex 6.5-8-metralis; ramulis tomentosis pilis rufescentibus; stipulis 7-8.5 cm. longis dense tomentulosis pilis rufescentibus obtectis; foliis 5-8-foliolatis; petiolis 28 cm. longis vel ultra tomentosis pilis rufescentibus obtectis, petiolulis 3-5.5 cm. longis tomentosis pilis rufescentibus obtectis; foliolis subcoriaceis supra atroviridibus subtus ferrugineis late oblongis apice subito cuspidato-acuminatis acumine 10-12 mm. longo basi rotundatis 14-25 cm. longis 4.5-11 cm. latis marginibus integerrimis incrassatis supra glabris costa media interdum brunneo-puberula subtus tomentulosis pilis stellatis ferrugineis obtectis, costa media prominenti, nervis lateralibus utroque 16-25 patentibus prominentibus, venulis reticulatis; inflorescentiis 35-37 cm. longis, rhachi 4 mm. diam. ferrugineo-tomentosis; capitulis subglobosis 5-6 mm. diam.; pedunculis 3-4 mm. longis ferrugineo-tomentosis; floribus sessilibus; hypanthio turbinato glabro; calycis lobis brevissimis late rotundatis; ovario 5-loculari 2.5 mm. longo 3 mm. lato glabro; stylis 5 squarrosis liberis; florium bracteis ovatis subito acuminatis 1.5-2 mm. longis 1-1.5 mm. latis; fructu non viso.

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Duida, southeastern-facing slopes along Caño Negro (tributary of Cano Iguapo), Territorio Federal Amazonas, alt. 305-1095 m., August 25-26, 1944, *Julian A. Steyermark 57989* (2sheets), "shrub with simple stem, 20-25 feet tall; leaves subcoriaceous, dark green above, dull green below with rufous-brown or castaneous; rachis covered with rufous-brown tomentum; flowers pale green."

This species is somewhat similar in aspect to *S. digyna* Cuatr., but that has, among other differences, 2 styles, a pubescent ovary, larger heads, and leaves pubescent on the upper surface.

Schefflera Jahnii (Harms) Steyermark, comb. nov.

Oreopanax Jahnii Harms Notiz. **13**: 446. 1937; *Oreopanax meridense* Planch. & Linden, ex Seem. in Journ. of Bot. **III**: 275. 1865, nomen.

Oreopanax meridense, a name only when published, appears to be synonymous with *O. Jahnii*. Although *Oreopanax Jahnii* is described as having 3-5 leaflets and *O. meridense* shows 5-7 leaflets, *Steyermark 56053* from Venezuela has 5-7 leaflets.

Schefflera tamana Steyermark, sp. nov.

Frutex vel arbor 6-8-metralis; ramulis glabrescentibus vel novellis adpresso-pilosis; stipulis lanceolatis 2-2.5 cm. longis intus glabris extus parce pubescentibus; foliis 5-7-foliolatis; petiolis gracilibus 5-6 cm. longis brunneo-tomentosis demum glabrescentibus; petiolulis 6-12 mm. longis brunneo-tomentosis vel demum subglabrescentibus; foliolis coriaceis supra atroviridibus tenuiter reticulato-rugosis oblongis apice subito cuspidato-acuminatis, acumine 5-7 mm. longo, basi rotundatis 3.5-5.5 cm. longis 1.5-2.3 cm. latis marginibus integerrimis supra glabris subtus glabris costa media saepe brunneo-tomentosa excepto, costa media subtus prominenti, nervis lateralibus utroque 8-9 inconspicuis, venulis subtus reticulatis paullo

manifestis; inflorescentiis terminalibus paniculatis 15-20 cm. longis, rhachi in lineis pubescentibus ceterum glabris vel subglabris; ramulis 18-21 patentibus tenuibus, 14-18 mm. longis 1-1.5 mm. latis parce tomentosis vel subglabris; pedunculorum bracteis ovatis caudato-acuminatis 4-5 mm. longis parce pilosis vel subglabris; umbellis subglobosis 5-8 mm. longis 12-15 mm. latis 5-7-floris; pedicellis 4-5 mm. longis glabris vel subglabris; ovario 5-loculari 2.5 mm. longo 3.5 mm. lato glabro; stylis 5 basi coalitis superne liberis parte libera 1 mm. longa; fructu in sicco 5-angulato subgloboso 3.5 mm. longo 4.5 mm. lato glabro; florium bracteis ovatis 1 mm. longis parce pubescentibus.

Type in herb. Chi. Nat. Hist. Mus., collected in rich moist woods at base of Páramo de Tamá, 4-10 kms. above Betania, state of Táchira, alt. 2500-2895 m., July 15, 1944, *Julian A. Steyermark 57321*, "tree or shrub 20-25 feet tall; leaves coriaceous, deep dark green above, dull green below; fruit green; rachis brown."

This species is well marked by its small leaflets, rugulose-reticulate on their upper surface, short petioles and petiolules, and relatively short inflorescences with short pedicels.

It is related to *S. bogotensis* Cuatr. and *S. huilensis* Cuatr. From the former it differs in the smaller leaflets, inflorescence, and fruits, and from the latter in the smaller leaflets and petiolules, rugulose shining upper leaf surface, glabrate rachis of inflorescence, and glabrous ovaries.

UMBELLIFERAE[25]

Azorella Julianii Mathias & Constance, sp. nov.

Herba caespitosa foliis radicalibus petiolatis laminis coreaceis oblanceolatis ovalibusve obtusis basi cuneatis decurrentibusve ultra medium ad apicem versus crenatis supra glabratis vel basi pilis laxiusculis setosis subtus glabratis 10-20 mm. longis 6-10 mm. latis, petiolis basi scarioso-vaginatis setoso-ciliatis 1-2 cm. longis, umbellis ca. 10-floris pedunculis pilis laxiusculis plus minusve dense vestitis ca. 1 cm. longis, involucri bracteis 6-8 lineari-oblongis subscariosis setoso-ciliatis ca. 5 mm. longis ca. 1 mm. latis, pedicellis infra medium ut apud pedunculos vestitis 2-6 mm. longis, calycis laciniis triangularibus viridibus acutis ca. 0.5 mm. longis latisque, petalis ovalis obtusis ca. 1.5 mm. longis, stylis adscendentibus 1-1.5 mm. longis, fructu ovoideo dorso paullo compresso 2.5 mm. longo 2 mm. lato, costis obscuris.

Plants cespitose; radical leaves petiolate, the blades oblanceolate to oval, 10-20 mm. long, 6-10 mm. broad, obtuse, cuneate or decurrent at the base, distally setose-crenate (the setae slender and flexuous) with 10 or more shallow crenations, coriaceous in texture, glabrous on both surfaces or frequently with 10 or more lax setose hairs at the apex of the petiole on the upper surface of some of the leaves; petioles 1-2 cm. long, scariously sheathing at the base, densely setose-

[25]By Mildred Mathias & Lincoln Constance

ciliate; umbels about 10-flowered, the peduncles about 1 cm. long, rather densely clothed with long, lax hairs; involucral bracts 6-8, linear-oblong, about 5 mm. long, about 1 mm. broad, setose-ciliate, subscarious; pedicels 2-6 mm. long, pubescent below like the peduncles; calyx teeth triangular, acute, about 0.5 mm. long and broad, green; petals oval, about 1.5 mm. long, obtuse; styles 1-1.5 mm. long, ascending; fruit ovoid, 2.5 mm. long, 2 mm. broad, slightly compressed dorsally, the ribs obscure (Fig. 94).

FIGURE 94

Azorella Julianii

A, Habit (X 1.5); B, Umbel (X 1.25); C, Fruit (X 6); D, Cross-section of fruit (X 9).

Type in herb. Chi. Nat. Hist. Mus., isotypes in herb. U. of Cal. and U. of Cal. at Los Angeles, collected near upper limit of páramo, around small lake, between Chachopo and Los Apartaderos, near El Aguila, state of Mérida, alt. 3930 m., April 15, 1944, *Julian A. Steyermark 55894.* Also collected in páramo along upper headwaters of Río Tormero, below El Aguila and above Chachopo, state of Mérida, alt. 3650-3965 m., March 13, 1944, *Steyermark 55658;* near El Aguila, between Chachopo and Los Apartaderos, state of Mérida, *Steyermark 55900;* San Rafael, state of Mérida, alt. 3533 m., *Reed 846* (US).

The genus *Azorella* appears to have been reported from Venezuela previously only on the basis of *A. crenata* (R. & O.) Pers. Although the general shape and crenation of the leaves of *A. Julianii* are somewhat reminiscent of that species, the cuneate and decurrent leaf blades and restriction of the crenations to the distal half of the lamina are quite distinctive. *Azorella biloba* (Schlecht.) Wedd., *A. ecuadorensis* Domin, and *A. Lehmannii* Hieron. share with *A. Julianii* the cuneate and decurrent leaf blades, but in these species the lamina is either entire or deeply few-lobed. In the present rather confused taxonomic status of this remarkable and perplexing genus, the new species appears to be strikingly distinctive and a suitable memento of its assiduous collector.

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